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Bonilla(10) **Pub. No.: US 2006/0260082 A1**(43) **Pub. Date: Nov. 23, 2006**(54) **CLEANING IMPLEMENT****Related U.S. Application Data**(75) Inventor: **Juan Jose Bonilla**, Cincinnati, OH
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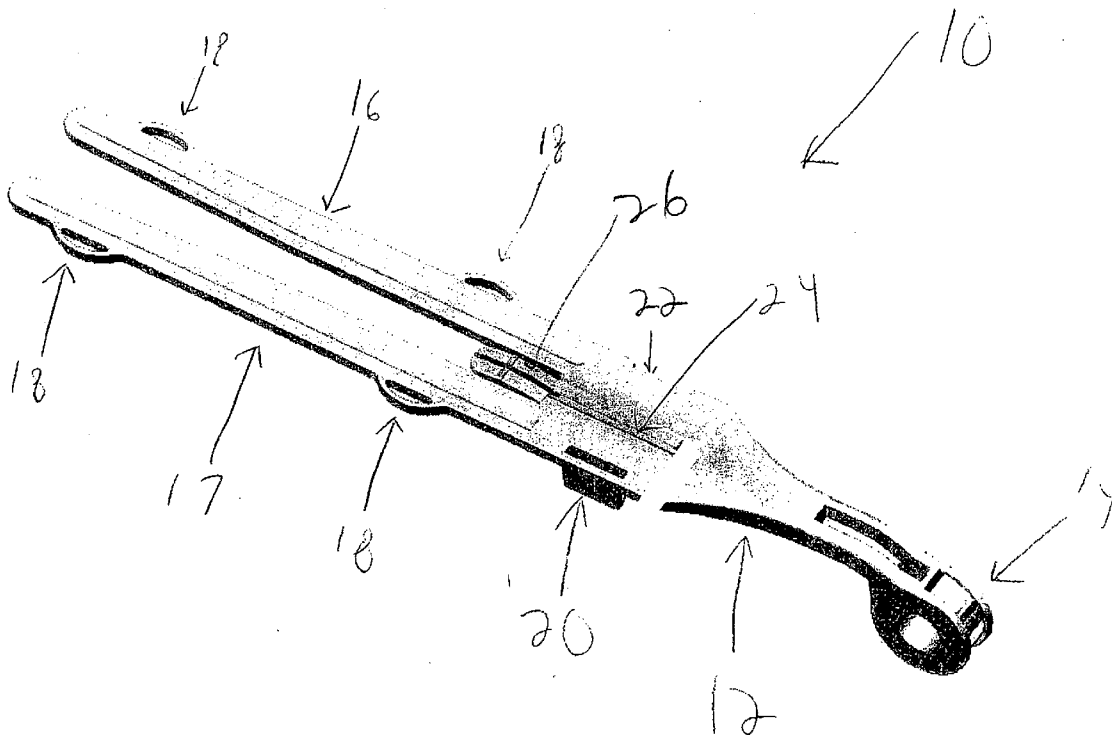
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(57)

ABSTRACT

A cleaning implement comprising: a base, at least two prongs functionally connected to the base, wherein each prong is capable of receiving at least one cleaning material having a cleaning portion, wherein said at least two prongs substantially parallel to a longitudinal axis, and wherein said cleaning implement when rotated 360° about the longitudinal axis is capable of contacting said cleaning portion with a surface during at least about 185°.

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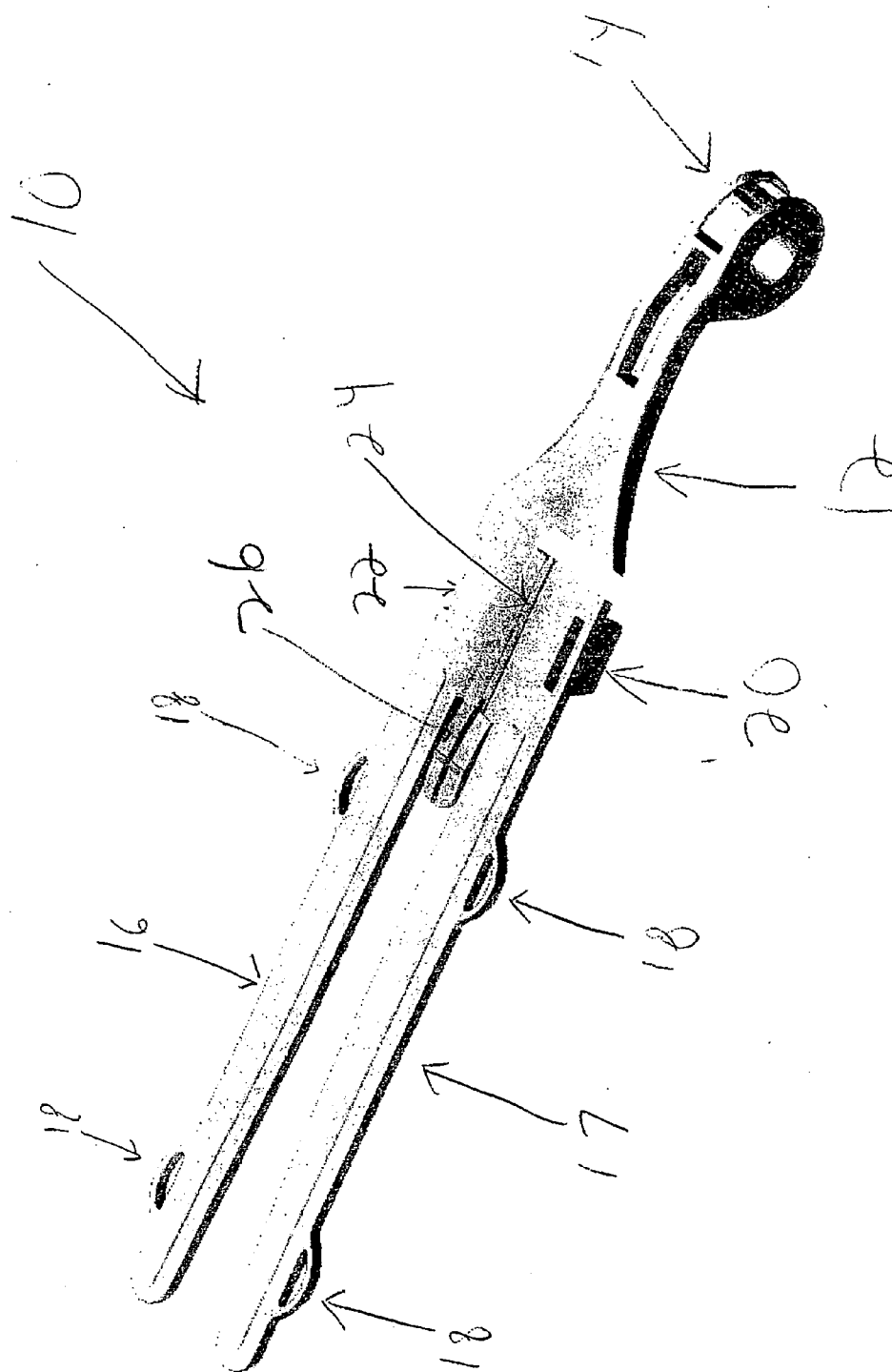
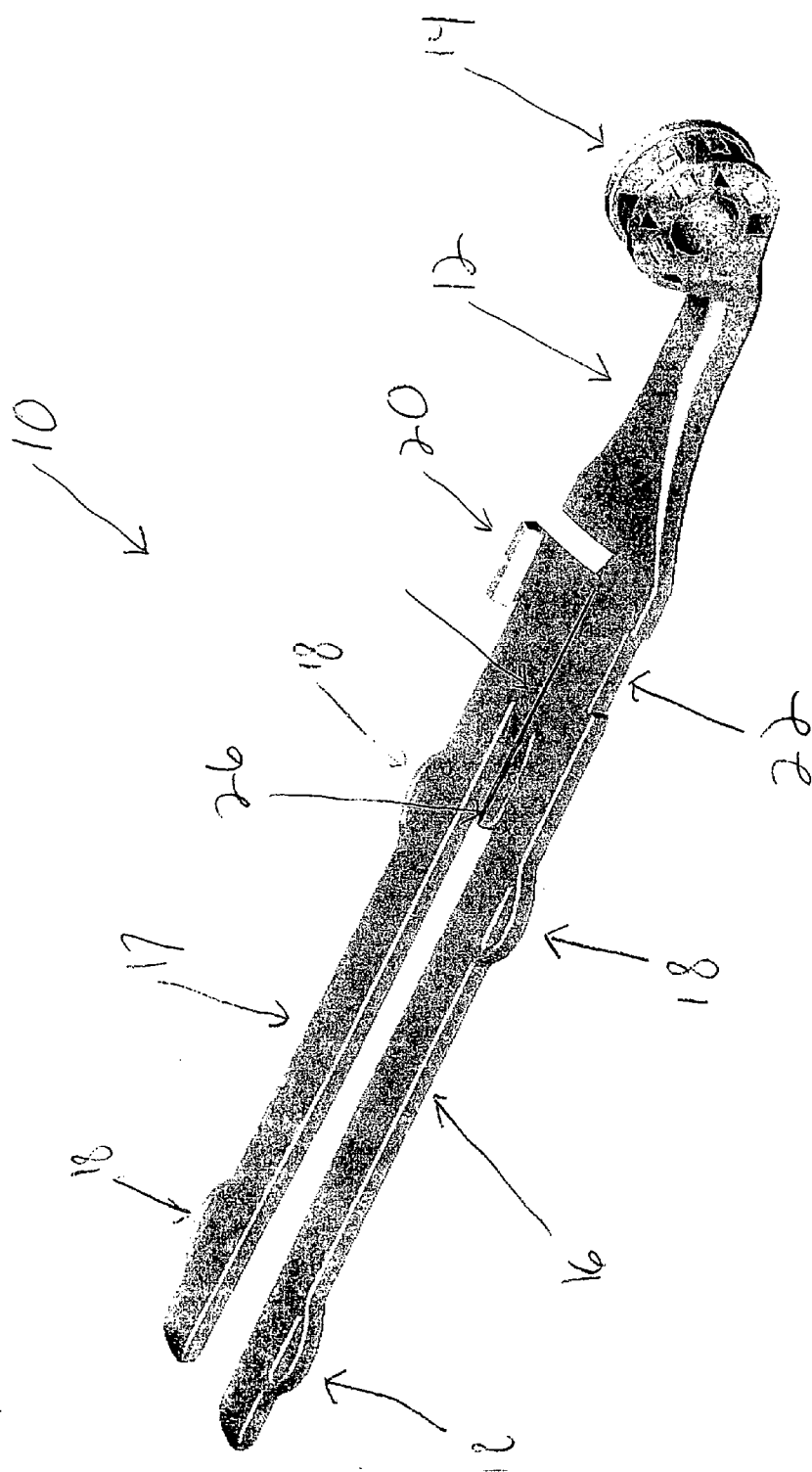


Fig 1



4-5

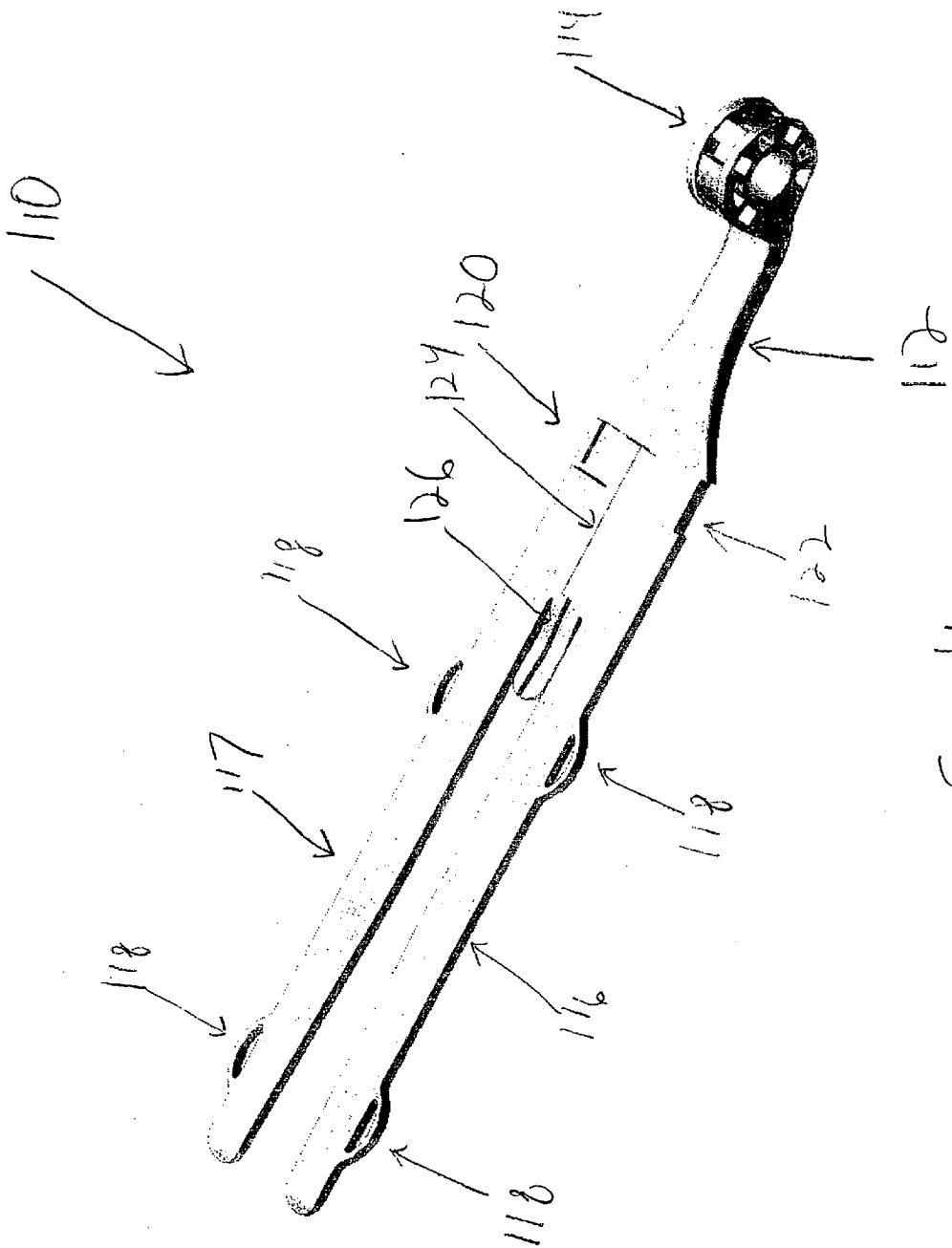


Fig 4

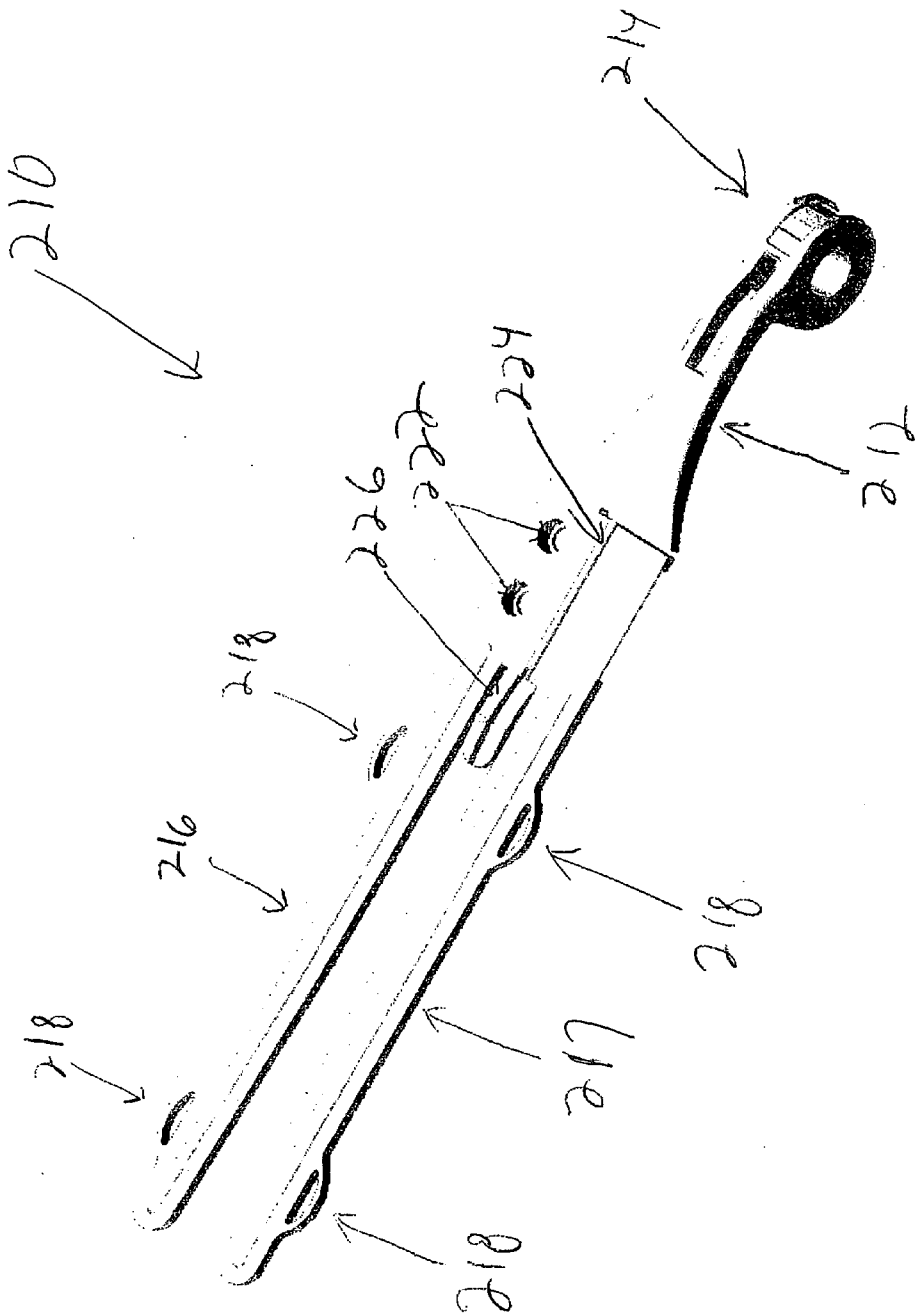


Fig 5

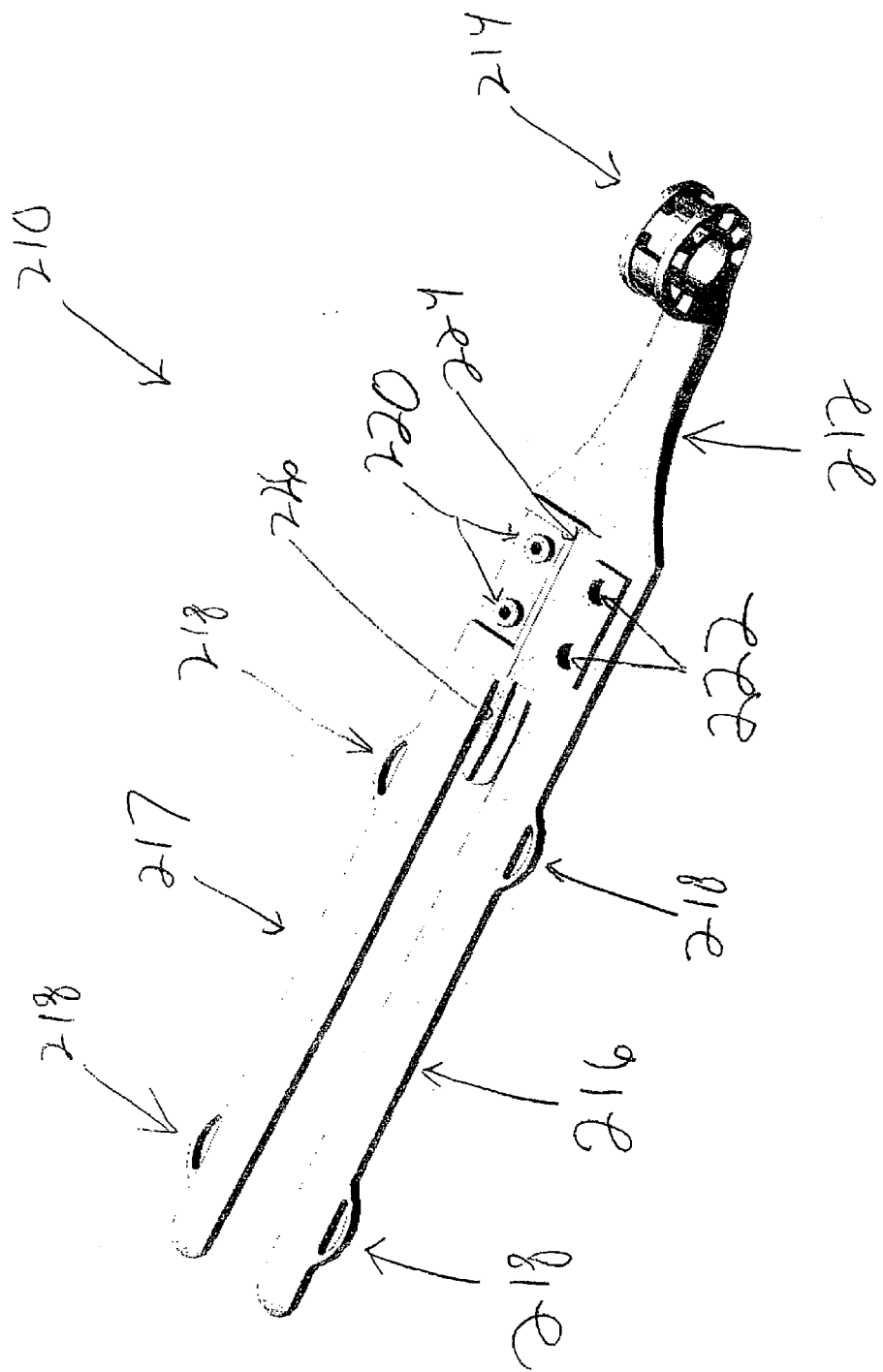


Fig 6

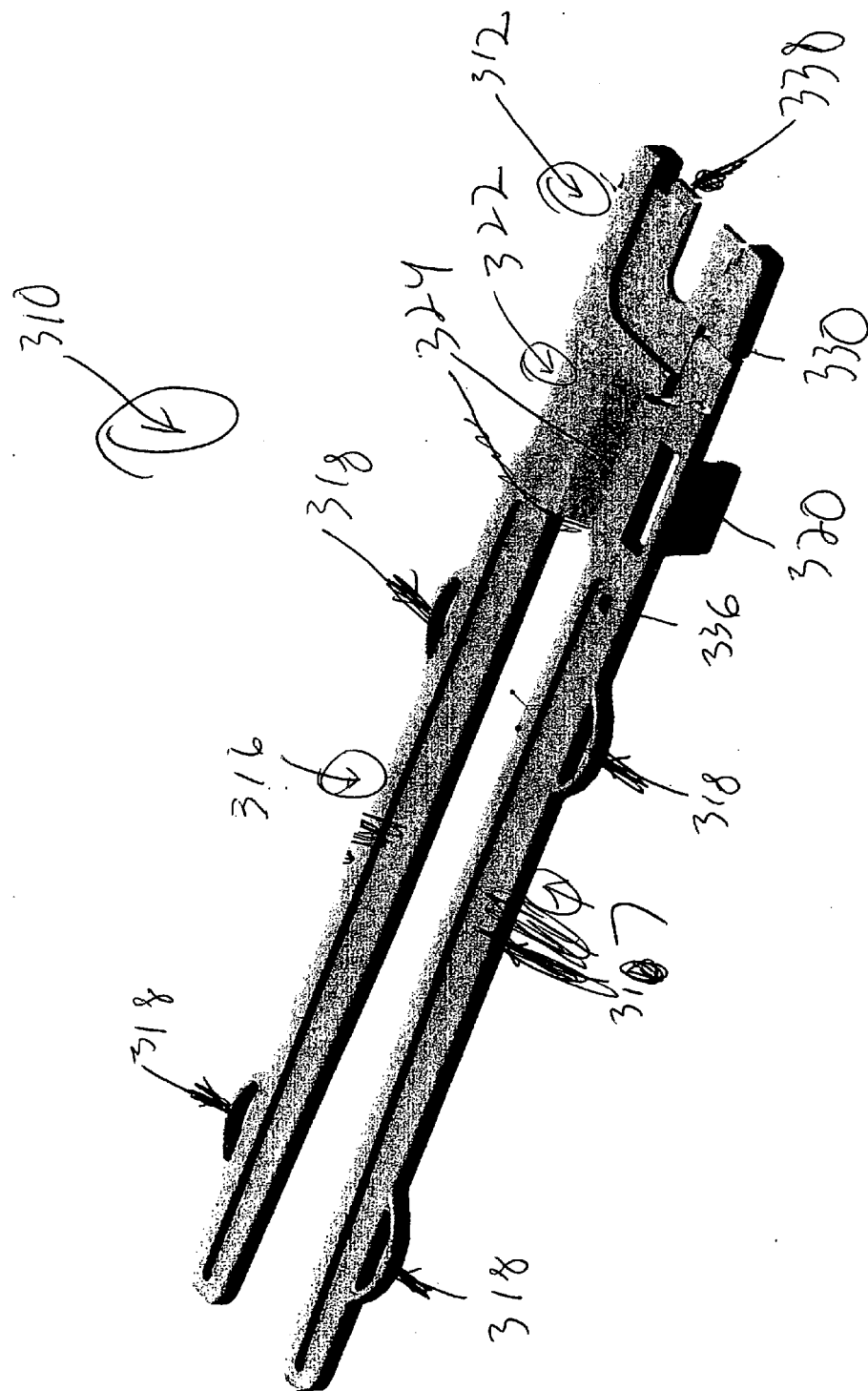


FIG. 7

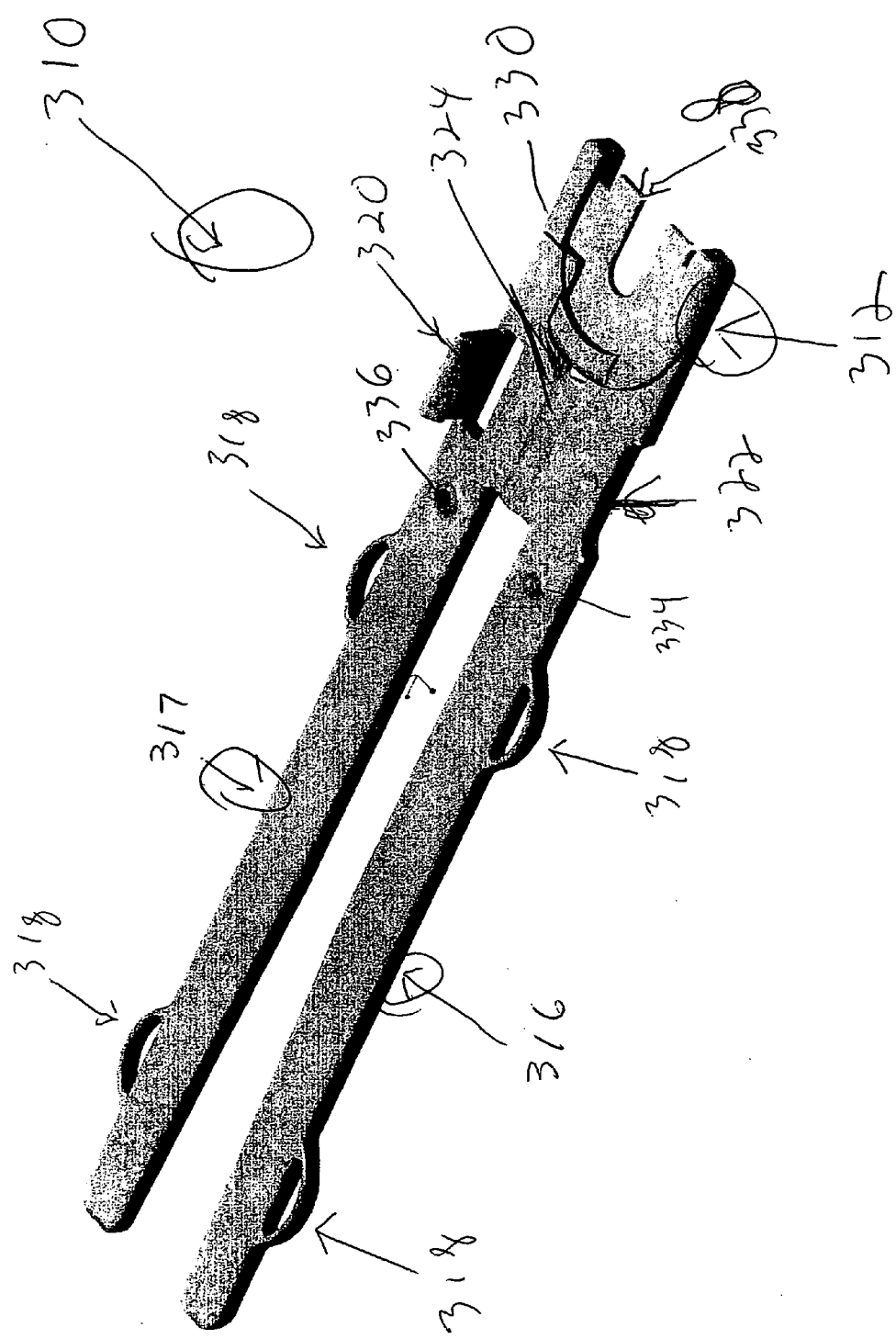


Figure 9

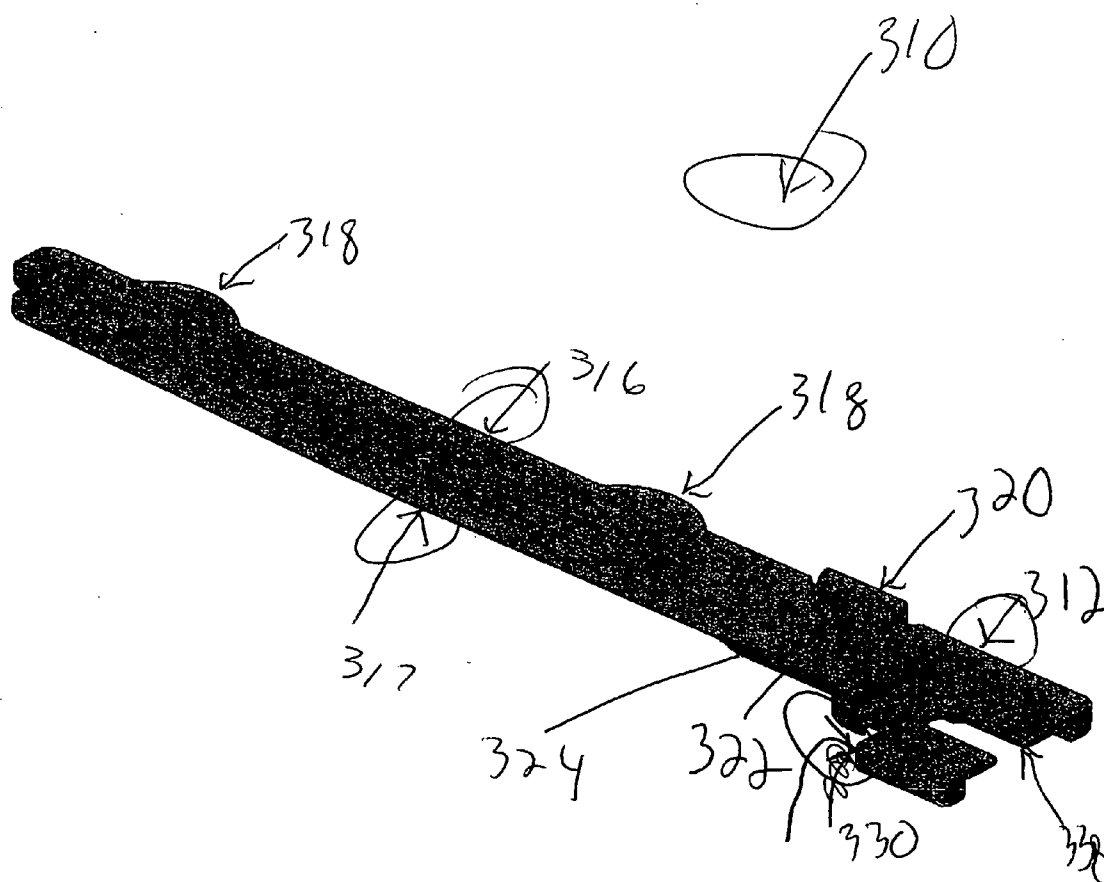


Fig 9

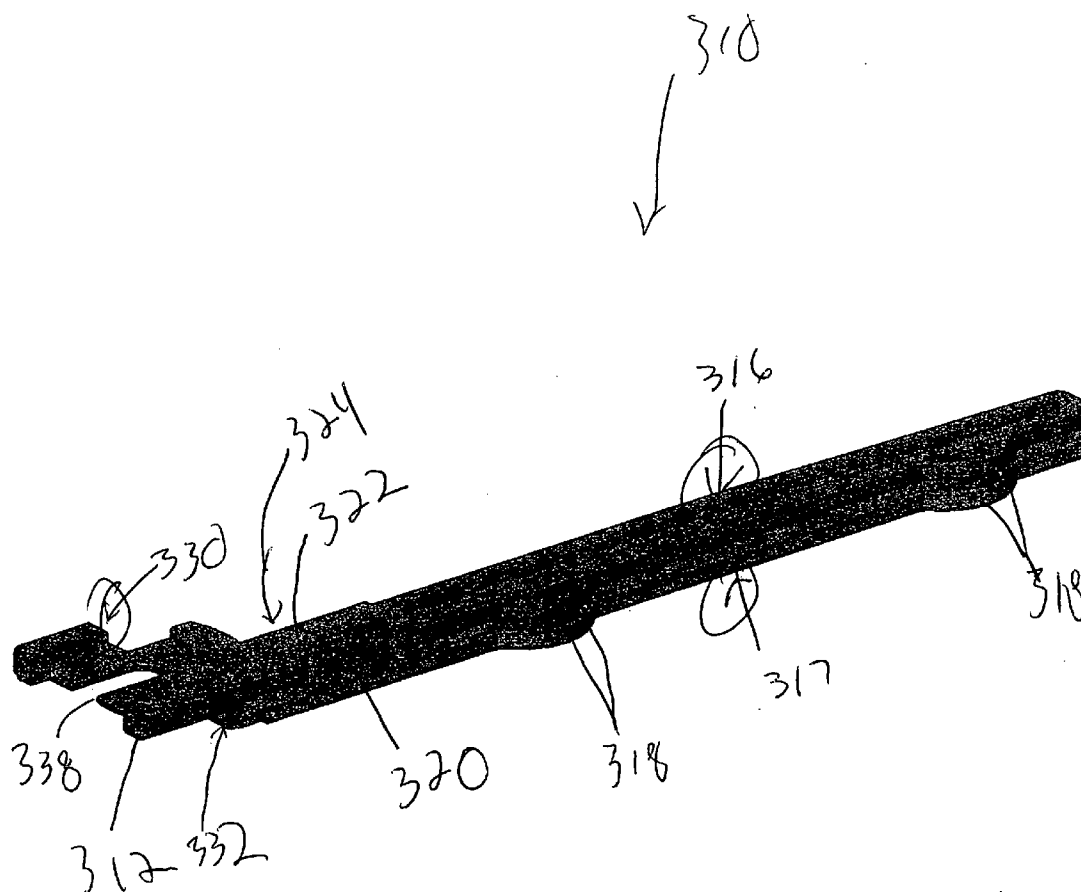


Fig 10

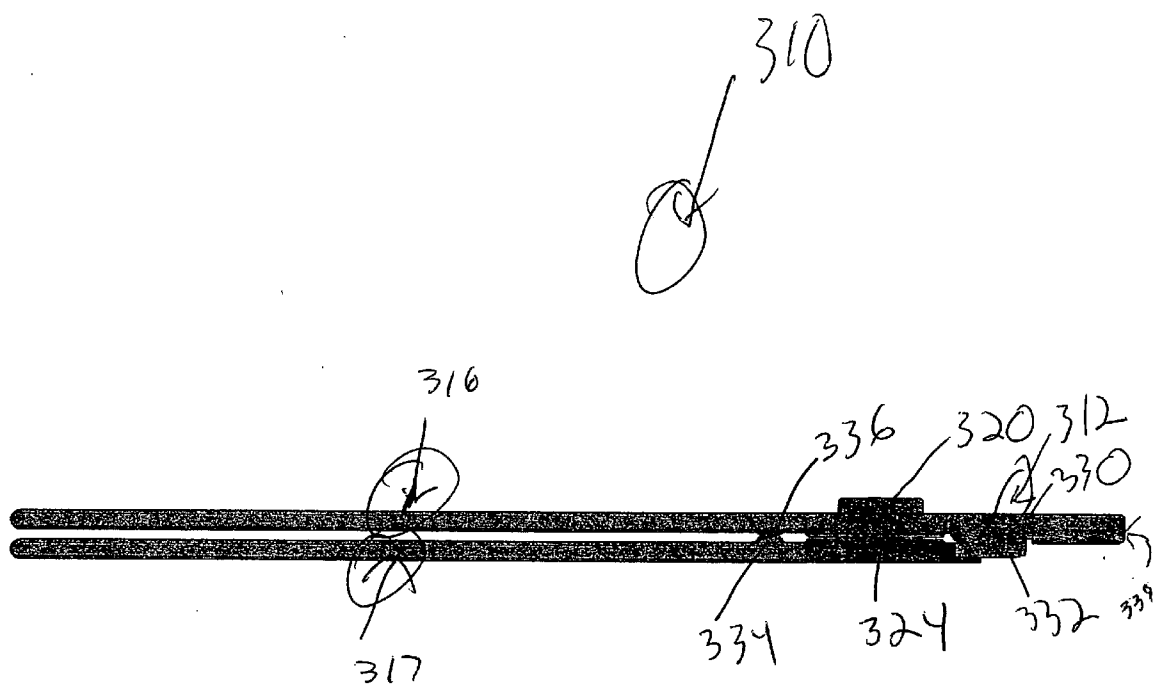


Fig 11

CLEANING IMPLEMENT

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application No. 60/683,547, filed May 20, 2005; and U.S. Provisional Application No. 60/699,186, filed Jul. 14, 2005.

BACKGROUND OF THE INVENTION

[0002] Difficulties controlling dust have been well documented in the art. Indeed, most have come across collections of dust at home, work, and the like. However, controlling the population of dust particles has been a long recognized difficulty.

[0003] Devices for controlling dust include items as simple as wiping with a rag or towel. However, using a rag or towel poses a significant burden on the user. For example, the reach of the rag or towel is substantially the same as the span of the user's arm and/or hands. Also, rags or towels pose cleanliness issues in that the dust particles trapped by the rag or towel easily come into contact with the user's person, thus spreading the dust particles.

[0004] Other cleaning implements have also been contemplated. One standing problem with these implements involves the amount of surface they are capable of cleaning. Specifically, the configuration of these cleaning implements is such that they are capable of cleaning one flat surface at a time, resulting in cleaning inefficiencies. Because these cleaning implements are capable of cleaning one surface at a time, at least two passes of the cleaning implement must be utilized in order to sufficiently remove dust from the surfaces to be cleaned.

[0005] While attempts to improve the cleaning characteristics of dusters or cleaning implements have been made, there has to date been no cleaning implement that substantially eliminates its problems and inefficiencies.

[0006] It is, therefore, highly desirable to create a cleaning implement that maximizes a user's effort while minimizing the spreading of dust particles. Further, it is highly desirable to maximize the functionality and versatility of a cleaning implement. This invention accomplishes those goals.

SUMMARY OF THE INVENTION

[0007] A first aspect of this invention relates to a cleaning implement comprising a base, at least two prongs functionally connected to the base, wherein each prong is capable of receiving at least one cleaning material having a cleaning portion, wherein said at least two prongs substantially parallel to a longitudinal axis, and wherein said cleaning implement when rotated 360° about the longitudinal axis is capable of contacting said cleaning portion with a surface during at least about 185°. A second aspect of this invention relates to a cleaning implement comprising a base, a first prong and a second prong functionally connected to the base wherein the first prong and the second prong are capable of receiving at least one cleaning material, a pivot longitudinally interposed between the first prong and the second prong wherein at least one of the first prong or the second prong is capable of at least partially rotating about the pivot, and a lock functionally connected to at least one of the first

prong or the second prong capable of at least temporarily fixing at least one of the first prong or the second prong about the pivot.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] While the specification concludes with claims particularly pointing out and distinctly claiming the invention, it is believed that the present invention will be better understood from the following description taken in conjunction with the accompanying drawings in which:

[0009] **FIG. 1** is a bottom isometric view of a first cleaning implement.

[0010] **FIG. 2** is a top isometric view of a first cleaning implement.

[0011] **FIG. 3** is a bottom isometric view of a second cleaning implement.

[0012] **FIG. 4** is a top isometric view of a second cleaning implement.

[0013] **FIG. 5** is a bottom isometric view of a third cleaning implement.

[0014] **FIG. 6** is a top isometric view of a third cleaning implement.

[0015] **FIG. 7** is a bottom isometric view of a fourth cleaning implement.

[0016] **FIG. 8** is a top isometric view of a fourth cleaning implement.

[0017] **FIG. 9** is a left isometric view of a fourth cleaning implement in the closed position.

[0018] **FIG. 10** is a right isometric view of a fourth cleaning implement in the closed position.

[0019] **FIG. 11** is a left view of a fourth cleaning implement in the closed position.

DETAILED DESCRIPTION OF THE INVENTION

[0020] While the specification concludes with the claims particularly pointing and distinctly claiming the invention, it is believed that the present invention will be better understood from the following description.

[0021] The devices, apparatuses, methods, components, and/or compositions of the present invention can include, consist essentially of, or consist of, the components of the present invention as well as other ingredients described herein. As used herein, "consisting essentially of" means that the devices, apparatuses, methods, components, and/or compositions may include additional ingredients, but only if the additional ingredients do not materially alter the basic and novel characteristics of the claimed devices, apparatuses, methods, components, and/or compositions.

[0022] All percentages and ratios used herein are by weight of the total composition and all measurements made are at 25° C., unless otherwise designated. A degree is a planar unit of angular measure equal in magnitude to $\frac{1}{360}$ of a complete revolution. When possible, an angle is measured between the outer edge of the inner facing surface and the vertex, whereby the outer edge is located distally located from the vertex.

[0023] All measurements used herein are in metric units unless otherwise specified.

[0024] It has now surprisingly been discovered that the device of the present invention provides increased cleaning efficiency. According to a first aspect of the present invention, there is provided a cleaning implement comprising: a base, at least two prongs functionally connected to the base, wherein each prong is capable of receiving at least one cleaning material having a cleaning portion, wherein said at least two prongs substantially parallel to a longitudinal axis, and wherein said cleaning implement when rotated 360° about the longitudinal axis is capable of contacting said cleaning portion with a surface during at least about 185°. In a second aspect of the present invention, there is provided a cleaning implement comprising: a base, a first prong and a second prong functionally connected to the base wherein the first prong and the second prong are capable of receiving at least one cleaning material, a pivot longitudinally interposed between the first prong and the second prong wherein at least one of the first prong or the second prong is capable of at least partially rotating about the pivot, and a lock functionally connected to at least one of the first prong or the second prong capable of at least temporarily fixing at least one of the first prong or the second prong about the pivot.

[0025] Without wishing to be bound by theory, it is believed that the cleaning implements of the present invention extend the reach of the user when attempting to clean hard-to-reach places and the like. Further the cleaning implement of the present invention is capable of at least partially cleaning multiple surfaces at once. As a non-limiting example, the cleaning implement of the present invention is capable of at least partially cleaning two surfaces, where the two surfaces are parallel to each other and at a distance apart where the cleaning implement is capable of contacting both surfaces, such as underneath audio equipment, refrigerators, and the like.

Materials

[0026] The cleaning implement of this invention, and its related elements, are made of any material known by one of ordinary skill in the art. Such materials include, but are not limited to, metals, woods, plastics, ceramics, and combinations thereof. In one embodiment, plastics include thermoplastic and thermoset plastics. Such plastics include, but are not limited to, high density polyethylene, polymethylmethacrylate, polypropylene, polycarbonate, diethyleneglycol bisarylcarbonate, polyethylene terephthalate, polyethylene naphthalate, polyvinyl chloride, polyurethane, epoxy resin, polyamide-based resins, low density polyethylene, styrene butadiene copolymers, acrylonitrile, acrylonitrile-butadiene copolymer, cellulose acetate butyrate and mixtures thereof.

[0027] In one embodiment, substantially transparent or translucent plastics are used to form the cleaning implement. Substantially transparent or translucent plastics have a light transmission of at least about 70%, in another embodiment at least about 80%, and in another embodiment at least about 90%. Polyethylene terephthalate is a plastic known to exhibit these characteristics. Likewise the materials may be processed in single or multiple layers. Because a variety of different materials may be used in the construction of the closures of the present invention the materials selected will be based on the intended end use and characteristics required of such a closure.

[0028] It is readily known to one of ordinary skill in the art that the material used to form the closure can possess wide range of colors and hues. One of ordinary skill would readily know how to color and process the materials used to form the container to achieve any variations in color, as well as degrees of transparency including see-through clear, translucent, translucent, and opaque.

Base

[0029] The cleaning implement of the present invention includes a base. The base of the present invention includes any structure capable of functionally connecting at least one of the elements of the present invention. In one embodiment, the base is functionally connected to at least one prong. The base can be connected to at least one prong by any method known in the art including, but not limited to, molding, co-molding, welding, grafting, adhering, screwing, nailing, stapling, and the like.

[0030] In one embodiment, the base is functionally connected to a handle. The handle of the present invention is utilized to, among other used, maneuver or manipulate the cleaning instrument. In one embodiment, the handle and the base are connected by an angling mechanism whereby the cleaning implement may be at least temporarily positioned at various angles to the handle. The angling mechanism comprises continuous mechanisms, such as hinged joints utilizing friction or force fitments as well as non-continuous mechanisms, such as ratcheting joints. One of ordinary skill in the art would readily know how to functionally connect the handle with the base, as well as how to provide various angles between the handle and base.

Prong

[0031] The cleaning implements of the present invention include at least one prong. The at least one prong of the present invention is capable of receiving at least one cleaning material. In one embodiment, the at least one prong receives the cleaning material by sliding the cleaning material over the at least one prong. In another embodiment, the at least one prong receives the cleaning material by being enveloped by the cleaning material. In yet another embodiment, the at least one prong receives the cleaning material by at least one of coating, wrapping, fixing using adhesives, glues, and/or mechanical methods, and combinations thereof, to the at least one prong.

[0032] In one embodiment, the at least one prong includes interference zones functionally connected to the at least one prong. Without wishing to be bound by theory, it is believed that interference zones provide areas of increased securing when engaged with a cleaning material. In one non-limiting example, the cleaning material is designed such that it includes at least one volume whereby the interference zone engages. In another embodiment, the interference zone includes any item capable of increasing the strength needed to overcome frictional and/or mechanical forces in removing the cleaning material from the at least one prong. These items include hook and loop fasteners (commonly referred to as Velcro®), adhesives, glues, raised and/or lowered regions including dimpled regions, slotted regions, as well as raised regions in the shape or letters, numbers, pictures, graphics, and the like. Further, interference zones include regions on the at least one prong whereby the surface of the at least one prong is modified to further increase friction

between the at least one prong and the cleaning material, including etching, scratching, abrading, and the like, over at least part of the surface.

[0033] In one embodiment the at least one prong has a length of from about 1 cm to about 25 cm, in another embodiment from about 5 cm to about 20 cm, in another embodiment from about 10 cm to about 15 cm, in another embodiment greater than about 5 cm, in another embodiment greater than about 10 cm. In one embodiment the at least one prong has a width of from about 2 mm to about 30 mm, in another embodiment from about 5 mm to about 20 mm, in another embodiment from about 8 mm to about 15 mm, in another embodiment greater than about 5 mm, in another embodiment greater than about 8 mm. In one embodiment the at least one prong has a height of from about 1 mm to about 15 mm, in another embodiment from about 2 mm to about 10 mm, in another embodiment from about 3 mm to about 8 mm, in another embodiment greater than about 2 mm, in another embodiment greater than about 3 mm.

[0034] In one embodiment, the cleaning implement has at least two prongs. In such an embodiment the at least two prongs are substantially parallel to a longitudinal axis. The longitudinal axis, as used herein, is not necessarily represented physically. The longitudinal axis, in one embodiment, is an imaginary line serving as a point of reference that is substantially parallel to the at least two prongs. In one embodiment, the at least two prongs are substantially parallel along their longest dimension, e.g., their length.

[0035] In one embodiment, when a cleaning material is engaged and the cleaning implement is rotated 360° about the longitudinal axis, the cleaning portion is capable of contacting a surface during at least 185°, in another embodiment, at least 200°, in another embodiment at least 270°, in another embodiment at least 300°, in another embodiment at least 330°, in another embodiment from about 290° to about 360°, in another embodiment from about 300° to about 330°, in another embodiment from about 200° to about 330° of the rotation. In one embodiment, the rotation of the cleaning implement is performed such that the cleaning portion is substantially not deformed when rotated.

[0036] In one embodiment, the prongs when rotated about the pivot are rotated such that the prongs are substantially adjacent. In another embodiment, the prongs when rotated about the pivot have an interior angle of less than about 90°, in another embodiment less than about 45°, in another embodiment less than about 30°, in another embodiment less than about 15°, in another embodiment less than about 5°, in another embodiment less than about 2°, in another embodiment from about 1° to about 25°, in another embodiment from about 0° to about 10°.

Cleaning Material

[0037] The cleaning material of the present invention has at least one cleaning portion. The cleaning portion of the present invention comprises the region having cleaning efficacy that effectively makes contact with a surface for cleaning. In one embodiment, the cleaning material of the present invention has a cleaning portion on a first side of the cleaning material. In another embodiment, the cleaning material has a cleaning surface on at least two sides of the material. In another embodiment, the outer surface of the

cleaning material is substantially comprised of the cleaning portion. Where the cleaning material has a cleaning portion on a first side, the cleaning material may further comprise at least one substrate on a second side. Without wishing to be bound by theory, the at least one substrate secures the cleaning portion onto the cleaning material.

[0038] The cleaning material of the present invention includes, but is not limited to, woven materials and non-woven materials. Woven materials for use herein include, but are not limited to, woven fabrics, woven cloths, and the like. Non-woven materials for use herein include, sponges, non-woven sheets, paper towels, tissues, and sheets, and the like. One non-limiting example of the cleaning material is found in U.S. Pat. No. 6,813,801, entitled "Cleaning Article" to Yoshinori et al., the contents of which are incorporated by reference.

Pivot

[0039] In one embodiment, whereby the present invention contains at least a first prong and a second prong, a pivot is longitudinally interposed between the first prong and the second prong. The pivot of the present invention includes any mechanism which allows at least one prong to at least partially rotate about a longitudinal axis at the pivot point and/or fulcrum. In one embodiment, the pivot is created by molding a line of weakness between the first prong and the second prong. In another embodiment the pivot is created by co-molding, welding, grafting and/or molding. Pivots of the current invention include hinges and the like.

Lock

[0040] In one embodiment, the present invention includes a lock functionally connected to at least one prong capable of at least temporarily fixing at least one prong in a position about the pivot. In one embodiment, portions comprising the lock are located on each prong. In another embodiment, the portions comprising the lock are located on one prong. Suitable lock include force fitments, zero hinge, one hinge and two hinge latches, snaps, hook and loop fasteners (commonly referred to as Velcro®), magnet and plate, magnet and magnet, clamps, and the like.

[0041] In one embodiment of the invention, the invention includes more than one lock.

[0042] In yet another embodiment, the present invention includes a first lock and a second lock. In such an embodiment, the device of the present invention is capable of at least temporarily fixing at least one prong about the pivot in at least two or more positions, in another embodiment two positions. As a non-limiting example, a first lock of the present invention is utilized to hold the prongs at least about 165°, in another embodiment at least about 170°, in another embodiment at least about 175°, in another embodiment substantially planar when measured about the pivot as the center or vertex of the angle. A second lock of the present invention is utilized to hold the prongs at least hold the prongs less than about 20°, in another embodiment less than about 15°, in another embodiment less than about 10°, in another embodiment less than about 5°, in another embodiment substantially parallel when measured about the pivot as the center or vertex of the angle.

[0043] It is contemplated that where there exists more than one lock, the prongs may be at least temporarily fixed in

multiple positions. These positions, as formed by the angle from the first prong and second prong with the pivot as the vertex include substantially planar, substantially parallel, substantially perpendicular, acute, obtuse, less than about 90°, greater than about 90°, less than 45°, greater than 45°, less than about 10°, less than about 5°, from about 170° to about 190°, from about 175° to about 185°.

EXAMPLES

[0044] The following examples are illustrative and do not show or indicate all configurations of the present invention.

[0045] In **FIGS. 1 and 2** the cleaning implement **10** comprising first prong **16**, second prong **17** and base **12** are shown. First interference zone **18** and second interference zone **26** are located on both first prong **16** and second prong **17**. Latch **20** is located on second prong **17** while latch receiver **22** is located on first prong **16**. Pivot **24** is longitudinally interposed between first prong **16** and second prong **17**. Ratcheting joint **18** is functionally attached to base **12**. Ratcheting joint **18** is capable of being attached to a handle (not shown).

[0046] In **FIGS. 3 and 4** the cleaning implement **110** comprising first prong **116**, second prong **117** and base **112** are shown. First interference zone **118** and second interference zone **126** are located on both first prong **116** and second prong **117**. Latch **120** is located on second prong **117** while latch receiver **122** is located on first prong **116**. Pivot **124** is longitudinally interposed between first prong **116** and second prong **117**. Ratcheting joint **118** is functionally attached to base **112**. Ratcheting joint **118** is capable of being attached to a handle (not shown).

[0047] In **FIGS. 5 and 6** the cleaning implement **210** comprising first prong **216**, second prong **217** and base **212** are shown. First interference zone **218** and second interference zone **226** are located on both first prong **216** and second prong **217**. Snaps **220** are located on second prong **217** while snap receivers **222** are located on first prong **216**. Pivot **224** is longitudinally interposed between first prong **216** and second prong **217**. Ratcheting joint **218** is functionally attached to base **212**. Ratcheting joint **218** is capable of being attached to a handle (not shown).

[0048] In **FIGS. 7-11** the cleaning implement **310** comprising first prong **316**, second prong **317** and base **312** are shown. First interference zone **318** and second interference zone comprising male portion **334** and female portion **336** are located on both first prong **316** and second prong **317**. A first lock is formed by latch **320** located on second prong **317** and latch receiver **322** located on first prong **316**. Pivot **324** is longitudinally interposed between first prong **316** and second prong **317**. Handle receiving portion **338** is functionally attached to base **312** and is capable of being attached to a handle (not shown). A second lock is formed by male lock portion **332** and female lock portion **330**.

[0049] The disclosure of all patents, patent applications (and any patents which issue thereon, as well as any corresponding published foreign patent applications), and publications mentioned throughout this description are hereby incorporated by reference herein. It is expressly not admitted, however, that any of the documents incorporated by reference herein teach or disclose the present invention. To the extent that any meaning or definition of a term in this

written document conflicts with any meaning or definition of the term in a document incorporated by reference, the meaning or definition assigned to the term in this document shall govern.

[0050] It should be understood that every maximum numerical limitation given throughout this specification would include every lower numerical limitation, as if such lower numerical limitations were expressly written herein. Every minimum numerical limitation given throughout this specification will include every higher numerical limitation, as if such higher numerical limitations were expressly written herein. Every numerical range given throughout this specification will include every narrower numerical range that falls within such broader numerical range, as if such narrower numerical ranges were all expressly written herein.

[0051] All documents cited in the Detailed Description of the Invention are, in relevant part, incorporated herein by reference; the citation of any document is not to be construed as an admission that it is prior art with respect to the present invention. To the extent that any meaning or definition of a term in this written document conflicts with any meaning or definition of the term in a document incorporated by reference, the meaning or definition assigned to the term in this written document shall govern.

[0052] While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

What is claimed is:

1. A cleaning implement comprising:

a base,

at least two prongs functionally connected to the base, wherein each prong is capable of receiving at least one cleaning material having a cleaning portion, wherein said at least two prongs substantially parallel to a longitudinal axis, and

wherein said cleaning implement when rotated 360° about the longitudinal axis is capable of contacting said cleaning portion with a surface during at least about 185°.

2. A cleaning implement comprising:

a base,

a first prong and a second prong functionally connected to the base wherein the first prong and the second prong are capable of receiving at least one cleaning material,

a pivot longitudinally interposed between the first prong and the second prong wherein at least one of the first prong or the second prong is capable of at least partially rotating about the pivot, and

a lock functionally connected to at least one of the first prong or the second prong capable of at least temporarily fixing at least one of the first prong or the second prong about the pivot.

3. A cleaning implement comprising:

a base,

a first prong and a second prong functionally connected to the base wherein the first prong and the second prong are capable of receiving at least one cleaning material,

a pivot longitudinally interposed between the first prong and the second prong wherein at least one of the first prong or the second prong is capable of at least partially rotating about the pivot,

a first lock functionally connected to at least one of the first prong or the second prong capable of at least temporarily fixing at least one of the first prong or the second prong in a first position about the pivot, and

a second lock functionally connected to at least one of the first prong or the second prong capable of at least temporarily fixing at least one of the first prong or the second prong in a second position about the pivot.

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