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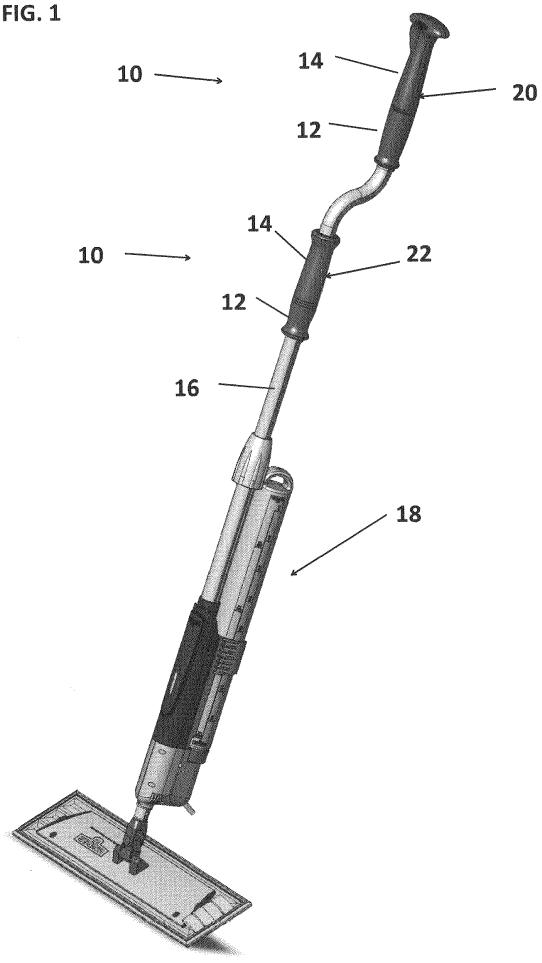
(54) TOOL HANDLES HAVING STATIONARY AND ROTATIONAL PORTIONS

(57) A tool and a method of moving a tool is provided. The tool includes a pole (16) defining an axis and a handle (20,22). The handle includes a stationary (12) and rotational portion (14), the stationary and rotational portions forming a unitary assembly with the stationary and rotational portions being adjacent one another along the axis. The stationary portion is secured to the pole in a manner that prevents it from rotating with respect to the pole and in a manner prevents the stationary portion from translational movement with respect to the pole along the axis. The rotational portion is secured to the stationary portion that allows the rotational portion to freely rotate with respect to the pole about the axis and with respect to the stationary portion and in a manner that prevents the rotational portion from translational movement with respect to the pole and the stationary portion along the axis.

FIG. 1



EP 3 453 304 A1

Description

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of US Provisional Application 62/556,605 filed on September 11, 2017.

BACKGROUND OF THE INVENTION

[0002] The present disclosure is related to tool handles. More particularly, the present disclosure is related to tool handles that have stationary and rotational portions.

[0003] Various tools such as, but not limited to, cleaning tools (e.g., mops) are used in many commercial and/or residential settings together with poles. In some instances, the tool includes a handle or grip (hereinafter "handle") on one or more locations of the pole where the user places their hand(s). The handle can provide improved comfort, improved grip, and other attributes.

[0004] Often, the use of the tool requires movement of the pole in a number of different directions. As a result of the above, it has been determined by the present disclosure that there is a need for handles that have both stationary and rotational portions in order to overcome, alleviate, and/or mitigate one or more of the aforementioned and other deleterious effects of prior art handles.

[0005] Accordingly, while existing tools and tool handles are suitable for their intended purpose the need for improvement remains, particularly in providing a tool or a tool handle having the features described herein.

SUMMARY

[0006] According to an embodiment, a tool is provided. The tool includes a pole defining an axis and a first handle. The first handle includes both a first stationary portion and a first rotational portion, the first stationary portion and the first rotational portion forming a unitary assembly with the first stationary portion and the first rotational portion being immediately adjacent one another along the axis. The first stationary portion is secured to the pole in a manner that prevents the first stationary portion from rotational movement with respect to the pole about the axis and in a manner prevents the first stationary portion from translational movement with respect to the pole along the axis. The first rotational portion is secured to the first stationary portion in a manner that allows the first rotational portion to freely rotate with respect to the pole about the axis and with respect to the first stationary portion and in a manner that prevents the first rotational portion from translational movement with respect to the pole and the first stationary portion along the axis.

[0007] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first handle is positioned so that the first stationary portion is at a top of the pole.

[0008] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first handle is positioned so that the first rotational portion is at a top of the pole.

[0009] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first handle is at region other than the top of the pole.

[0010] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, a second handle is provided having a second stationary portion and a second rotational portion. The second stationary portion and the second rotational portion forming a second unitary assembly with the second stationary portion and the second rotational portion being immediately adjacent one another along the axis. The second stationary portion is coupled to the pole at a region other than the top of the pole.

[0011] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first handle further comprises an activation trigger.

[0012] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the activation trigger is positioned on the first rotational portion.

[0013] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, wherein the activation trigger is positioned on the first stationary portion.

[0014] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first handle further comprises a rotational coupler, the rotational coupler securing the first stationary portion and the first rotational portion to one another.

[0015] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first stationary portion has a length of between 2 - 4 inches.

[0016] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first stationary portion has a length of about 2 inches.

[0017] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first rotational portion has a length along the axis that is between 4 - 6 inches.

[0018] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first stationary portion and the first rotational portion have a common outer diameter.

[0019] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the pole is a straight pole or a bent pole.

[0020] In some embodiments either alone or together with any one or more of the aforementioned and/or after-

mentioned embodiments, the pole is a fixed length pole or a telescoping pole.

[0021] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the first handle further comprises one or more gripping regions positioned and/or configured to assist in gripping of the handle.

[0022] In accordance with another embodiment a method of moving a tool back-and-forth, is provided. The method includes positioning an upper hand on an upper handle of a pole so that a first portion of the upper hand grasps a stationary portion of the upper handle and a second portion of the upper hand grasps a rotational portion of the upper handle. A lower hand is positioned on a lower handle of the pole so that a first portion of the lower hand grasps a stationary portion of the lower handle and a second portion of the lower hand grasps a rotational portion of the lower handle. The user switches between grasping the stationary and/or rotational portions of the upper and/or lower handles by adjusting which of the first and second portions of the upper and/or lower hands applies pressure to the upper and/or lower handles, respectively.

[0023] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the switching step comprises using only the first portion of the upper and lower hands to apply pressure to only the stationary portions of the upper and lower handles.

[0024] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the switching step comprises using only the second portion of the upper and lower hands to apply pressure to only the rotational portions of the upper and lower handles.

[0025] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the switching step comprises:using only the first portion of the lower hand to apply pressure to only the stationary portion of the lower handle; and using only the second portion of the upper hand to apply pressure to only the rotational portion of the upper handle.

[0026] In some embodiments either alone or together with any one or more of the aforementioned and/or aftermentioned embodiments, the switching step comprises using only the second portion of the lower hand to apply pressure to only the rotational portion of the lower handle; and using only the first portion of the upper hand to apply pressure to only the stationary portion of the upper handle.

[0027] 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.

DESCRIPTION OF THE DRAWINGS

[0028]

FIG. 1 is a perspective view of a tool having a bent or offset pole in use with exemplary embodiments of top and middle handles according to the present disclosure;

FIG. 2 is a perspective view of a tool having a straight pole in use with the top and middle handles of FIG. 1;

FIG. 3 is a perspective view of an exemplary embodiment of the top handle of FIGS. 1 and 2;

FIG. 4 is a perspective view of an exemplary embodiment of the middle handle of FIGS. 1 and 2;

FIG. 5 is a perspective view of an alternate exemplary embodiment of the top handle of FIG. 3;

FIG. 6 is a perspective, partially exploded view of the top handle of FIG. 3;

FIG. 7 is a sectional, partially exploded view of the top handle of FIG. 3;

FIG. 8 is a perspective exploded view of the middle handle of FIGS. 4; and

FIG. 9 illustrates an exemplary embodiment of a back-and-forth cleaning path of the tool of FIG. 1.

DETAILED DESCRIPTION

[0029] Referring to the drawings and in particular to FIGS. 1-2, exemplary embodiments of handles according to the present disclosure are shown and are generally referred to by reference numeral 10. Advantageously, handles 10 have both a stationary portion 12 and a rotational portion 14, which have been found by the present disclosure to provide enhanced utility by allowing the user more gripping and use choices than previously possible.

[0030] Handles 10 are shown in use with a pole 16 having a tool 18. For ease of discussion, tool 18 is shown as cleaning implement as disclosed in Applicant's own U.S. Application No. 15/238,262. Of course, it should be recognized that handles 10 are contemplated for use with any desired tool. Similarly, pole 16 is shown for ease of discussion as being either a bent/offset pole (FIG. 1) or a straight pole (FIG. 2). Of course, it should also be recognized that handles 10 are contemplated for use with any desired pole, including fixed length poles or telescoping poles.

[0031] Handles 10 are shown in FIG. 1 and FIG. 2 with two different variants, namely as a top handle 20, shown in more detail in FIG. 3 and a middle handle 22, shown in more detail in FIG. 4. Top handle 20 and middle handle

22 each include stationary portion 12 and rotational portion 14.

[0032] Additionally, top handle 20 includes an activation trigger 24 that can be operatively connected to one or more portions of tool 18. In the illustrated embodiment, trigger 24 is positioned on the rotational portion 14. Of course, it is contemplated by the present disclosure for trigger 24 to be positioned on the stationary portion 12. Alternately in another embodiment, and as shown in FIG. 5, it is contemplated by the present disclosure for top handle 20 to lack any trigger. Moreover and although not shown, in still further embodiments it is contemplated by the present disclosure for middle handle 22 to include a trigger positioned on either stationary or rotational portions 12, 14.

[0033] In some embodiments, handles 20, 22 can include one or more gripping regions 26. Gripping regions 26 can be formed of material that provides increased friction, provides softer materials than pole 16, provides raised or textured areas, provides a diameter large enough for comfortable gripping as pole 16 can of the be too small to easily hold, or any other attribute to assist in gripping. For example, it is contemplated by the present disclosure for handles 10 to be made of any desired material. For example, handles 20, 22 can be made of plastics such as, but not limited to, polypropylene (PP), **polyoxymethylene** (POM), **acrylonitrile butadiene styrene** (ABS), and others, and can include one or more thermoplastic elastomers (TPE) gripping regions 26.

[0034] Top handle 20 is described in more detail with reference to FIG. 6 and FIG. 7. Top handle 20 includes stationary portion 12, rotational portion 14, and a rotational coupler 30. Rotational coupler 30 secures stationary and rotational portions 12, 14 to one another so as to allow the portions to freely rotate with respect to one another about a longitudinal axis (A), but prevents translational movement of the portions with respect to one another along the axis (A). Stationary portion 12 is secured to pole 16 in a manner that prevents rotation about the axis (A) and prevents translational movement along the axis (A).

[0035] As used herein, the terms "freely rotate" and "free rotation" shall mean rotate at a torque of less than about 15 kg-mm, with less than 10 kg-mm being desired, and less than 3 kg-mm being desired.

[0036] In one or more of the embodiments disclosed herein, portions 12, 14 have a length (L1, L2) along the axis (A) that is sufficient to allow the user to grip the respective portion. In some embodiments, stationary portion 12 has a length (L1) of between 2 to 4 inches, while rotational portion 14 has a length (L2) of between 4 to 6 inches with between 4 to 5 inches being desired.

[0037] Here, the present application has found that - particularly in middle handle 22 - that the length (L1) of stationary portion 12 need not be sufficient to receive the entire hand of the user. Rather, it has been determined that length (L2) of stationary portion 12 of middle handle 22 having enough length to receive one or two fingers (i.e., about 2 inches) provides sufficient area for the user to control tool 18 by preventing rotation when desired. For example, positioning of stationary and rotational portions 12, 14 into a unitary assembly immediately adjacent one another allows the user to have their hand bridge the two portions so that some fingers are on the stationary portion 12 and others are on the rotational portion 14. In this manner, the user can switch between grasping the stationary portion 12 and grasping the rotational portion 14 by merely adjusting which of their fingers is applying pressure to the handles 20, 22. In some embodiments, portions 12, 14 are configured with outer diameters that are common to allow easy transition between the two portions and/or to allow for grasping of both portions with different fingers of the same hand.

[0038] During assembly, rotational coupler 30 is inserted into a bore 32 of stationary portion 12. Coupler 30 is fixedly secured to rotational portion 14 so as to secure portions 12, 14 to one another in allow free rotation about axis (A), but prevent translational movement of the portions along axis (A). For example, coupler 30 can have screws 34 passed through the coupler and into nuts 36 held by rotational portion 14.

[0039] Of course, it is contemplated by the present disclosure for portions 12, 14 to be secured to one another in any desired manner that is sufficient to allow free rotation of the portions with respect to one another about the axis (A), but to prevent translational movement of the portions with respect to one another along the axis (A).

[0040] Finally, stationary portion 12 is secured to pole 16. In the illustrated embodiment, stationary portion 12 includes a stationary coupler 38 that receives a rivet or other mechanical fastener (not shown) to secure the stationary portion to pole 16 in a manner that prevents rotation about the axis (A) and prevents translational movement along the axis (A). Of course, it is contemplated by the present disclosure for stationary portion 12 to be secured to pole 16 in any desired manner that is sufficient to prevent rotation about the axis (A) and prevent translational movement along the axis (A) such as, but not limited to, a press fit, an adhesive connection, a welded connection, and any others.

[0041] Middle handle 22 is described in more detail with reference to FIG. 8. Middle handle 22 includes stationary portion 12, rotational portion 14, and a fixing coupler 40. Coupler 40 captures rotational portion 14 between the coupler and stationary portion 12 so as to allow the portions 12, 14 to freely rotate with respect to one another about axis (A), but to prevent translational movement of the portions 12, 14 along the axis (A).

[0042] Additionally, stationary portion 12 is secured to pole 16 in a manner that prevents rotation of the stationary portion about the axis (A) and prevents translational movement of the stationary portion along the axis (A). In the illustrated embodiment, stationary portion 12 includes a stationary coupler 38 that receives a rivet or other mechanical fastener (not shown) to secure stationary portion 12 to pole 16. Of course, it is contemplated

by the present disclosure for stationary portion 12 to be secured to pole 16 in any desired manner that is sufficient to prevent rotation about the axis (A) and prevent translational movement along the axis (A) such as, but not limited to, a press fit, an adhesive connection, a welded connection, and any others.

[0043] Similarly, coupler 40 receives a rivet or other mechanical fastener (not shown) to secure the coupler 40 to pole 16 in a manner that prevents rotation about the axis (A) and prevents translational movement along the axis (A). Of course, it is contemplated by the present disclosure for coupler 40 to be secured to pole 16 in any desired manner that is sufficient to prevent rotation about the axis (A) and prevent translational movement along the axis (A) such as, but not limited to, a press fit, an adhesive connection, a welded connection, and any others. In this manner, rotational portion 14 is freely rotatably between coupler 40 and stationary portion 12 in a desired position on pole 16.

[0044] During assembly, stationary portion 12 includes a region 42 that is inserted into a bore 44 of rotational portion 14. Coupler 40 and stationary portion 12 are fixedly secured to pole 16 so as to secure rotational portion 14 between the coupler and the stationary portion.

[0045] Advantageously, stationary portion 12 remains in the preset position on pole 16 without rotation about axis (A) or translation along axis (A), while rotational portion 14 remains in the preset position on pole 16 without translational movement along axis (A), but in a manner that allows free rotation about axis (A). Moreover, portions 12, 14 have lengths (L1, L2) that allow either portion to be grasped by the user. It has been determined by the present disclosure that handles 20, 22 allow the user to grip tool 18 in a plurality of combinations not previously possible.

[0046] Handles 10 of the present disclosure find use with pole 16 configured as the bent/offset pole and tool 18 that requires a back-and-forth cleaning path such as in FIG.1. The back-and-forth cleaning path is shown in FIG. 9, where tool 18 is pulled along a surface being cleaned while the leading edge (Le) of the tool 18 is moved back-and-forth. The back-and-forth motion can be efficient for cleaning large areas. The ease of movement of tool 18, or lack thereof, can be magnified in instances where the total surface area of the surface being cleaned/conditioned is large - either by virtue of there being a single large surface or multiple smaller surfaces. Handles 10 of the present disclosure have been found to reduce fatigue by improving the efficiency of motion by increasing the use of larger muscle groups when cleaning is desired when cleaning/conditioning surfaces by providing more flexibility to meet each user's particular method of inducing the back-and-forth cleaning path.

[0047] Specifically, it has surprisingly been found by the present disclosure that different users induce the same back-and-forth cleaning path with such bent/offset poles 16 in very different manners - such that providing handles 20, 22 both with stationary and rotational portions 12, 14 has been found to particularly suited to maximize the gripping options for the users. For example, some users exclusively make use of rotational portion 14 of both handles 20, 22 to induce the back-and-forth cleaning path. Other users primarily make use of stationary portion 12 of middle handle 22 to induce the back-and-forth cleaning path while gripping rotational portion 14 of upper handle 20 so that the upper handle rotates freely. Still other users primarily make use of stationary portion 12 of top handle 20 to induce the back-and-forth cleaning path while gripping rotational portion 14 of middle handle 22 so that the middle handle rotates freely. Still other users make primary use of stationary portions 12 of both top and middle handles 20, 22.

[0048] Advantageously, handles 20, 22 allow the end user to determine which combination of stationary/rotational portions 12, 14 to use for each of the handles works best for them to create the desired back-and-forth motion. Further, handles 20, 22 allow the end user to easily adjust the stationary/rotational grip for each of the handles without having to significantly change hand position, which improved ergonomics and reduced fatigue.

[0049] Handles 20, 22 are further configured, due to the integration of both stationary and rotational portions 12, 14 into a unitary assembly immediately adjacent one another, so that the user can allow their hand to bridge stationary and rotational portions 12, 14 so that some fingers are on the stationary portion and others are on the rotational portion. In this manner, the user can switch between grasping the stationary portion 12 and the rotational portion 14 by merely adjusting which of their fingers is applying pressure to the handles 20, 22.

[0050] Moreover, it has been found by the present disclosure that use of only handles that freely rotate creates issues when utilizing tool 18 in cleaning tasks that do not require the back-and-forth motion - such as in tight spaces (e.g., around table legs, chairs, and the like) and/or during scrubbing tasks. As used herein, scrubbing tasks are intended to define tasks that require the user to apply an additional force along the axis (A) to increase the localized force between tool 18 and the surface being cleaned.

[0051] Here, use of stationary portion 12 of both handles 20, 22 provides the user increased control of tool 18, which can be particularly useful in tight spaces and scrubbing tasks. Again, the ease with which the user can switch between grasping stationary portion 12 and rotational portion 14 on each of handles 20, 22 provides increased ease than previously possible.

[0052] Although various attributes of assembly are described herein with respect to different embodiments, it is contemplated by the present disclosure for the assembly to include any of the attributes described herein in any desired combination.

[0053] It should also be noted that the terms "first", "second", "third", "upper", "lower", "front", "back", 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.

[0054] 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.

Claims

1. A tool comprising
a pole defining an axis; and
a first handle having both a first stationary portion and a first rotational portion, the first stationary portion and the first rotational portion forming a unitary assembly with the first stationary portion and the first rotational portion being immediately adjacent one another along the axis,
the first stationary portion secured to the pole in a manner that prevents the first stationary portion from rotational movement with respect to the pole about the axis and in a manner prevents the first stationary portion from translational movement with respect to the pole along the axis, and
the first rotational portion secured to the first stationary portion in a manner that allows the first rotational portion to freely rotate with respect to the pole about the axis and with respect to the first stationary portion and in a manner that prevents the first rotational portion from translational movement with respect to the pole and the first stationary portion along the axis.

2. The tool of claim 1, wherein the first handle is positioned so that the first stationary portion is at a top of the pole.

3. The tool of claim 1, wherein the first handle is positioned so that the first rotational portion is at a top of the pole.

4. The tool of claim 1, wherein the first handle is at region other than the top of the pole.

5. The tool of claim 1, further comprising:

a second handle having a second stationary portion and a second rotational portion, the second stationary portion and the second rotational portion forming a second unitary assembly with the second stationary portion and the second rotational portion being immediately adjacent one another along the axis,
wherein the second stationary portion is coupled to the pole at a region other than the top of the pole.

6. The tool of claim 1, wherein the first handle further comprises an activation trigger.

7. The tool of claim 6, wherein the activation trigger is positioned on the first rotational portion.

8. The tool of claim 6, wherein the activation trigger is positioned on the first stationary portion.

9. The tool of claim 1, wherein the first handle further comprises a rotational coupler, the rotational coupler securing the first stationary portion and the first rotational portion to one another.

10. The tool of claim 1, wherein the first stationary portion has a length of between 2 - 4 inches.

11. The tool of claim 10, wherein the first stationary portion has a length of about 2 inches.

12. The tool of claim 1, wherein the first rotational portion has a length along the axis that is between 4 - 6 inches.

13. The tool of claim 1, wherein the first stationary portion and the first rotational portion have a common outer diameter.

14. The tool of claim 1, wherein the pole is a straight pole or a bent pole.

15. The tool of claim 1, wherein the pole is a fixed length pole or a telescoping pole.

16. The tool of claim 1, wherein the first handle further comprises one or more gripping regions positioned and/or configured to assist in gripping of the handle.

17. A method of moving a tool back-and-forth, comprising:

positioning an upper hand on an upper handle of a pole so that a first portion of the upper hand grasps a stationary portion of the upper handle and a second portion of the upper hand grasps a rotational portion of the upper handle;
positioning a lower hand on a lower handle of the pole so that a first portion of the lower hand grasps a stationary portion of the lower handle and a second portion of the lower hand grasps a rotational portion of the lower handle; and
switching between grasping the stationary

and/or rotational portions of the upper and/or lower handles by adjusting which of the first and second portions of the upper and/or lower hands applies pressure to the upper and/or lower handles, respectively.

18. The method of claim 17, wherein the switching step comprises using only the first portion of the upper and lower hands to apply pressure to only the stationary portions of the upper and lower handles.

19. The method of claim 17, wherein the switching step comprises using only the second portion of the upper and lower hands to apply pressure to only the rotational portions of the upper and lower handles.

20. The method of claim 17, wherein the switching step comprises:

using only the first portion of the lower hand to apply pressure to only the stationary portion of the lower handle; and
using only the second portion of the upper hand to apply pressure to only the rotational portion of the upper handle.

21. The method of claim 17, wherein the switching step comprises:

using only the second portion of the lower hand to apply pressure to only the rotational portion of the lower handle; and
using only the first portion of the upper hand to apply pressure to only the stationary portion of the upper handle.

FIG. 1

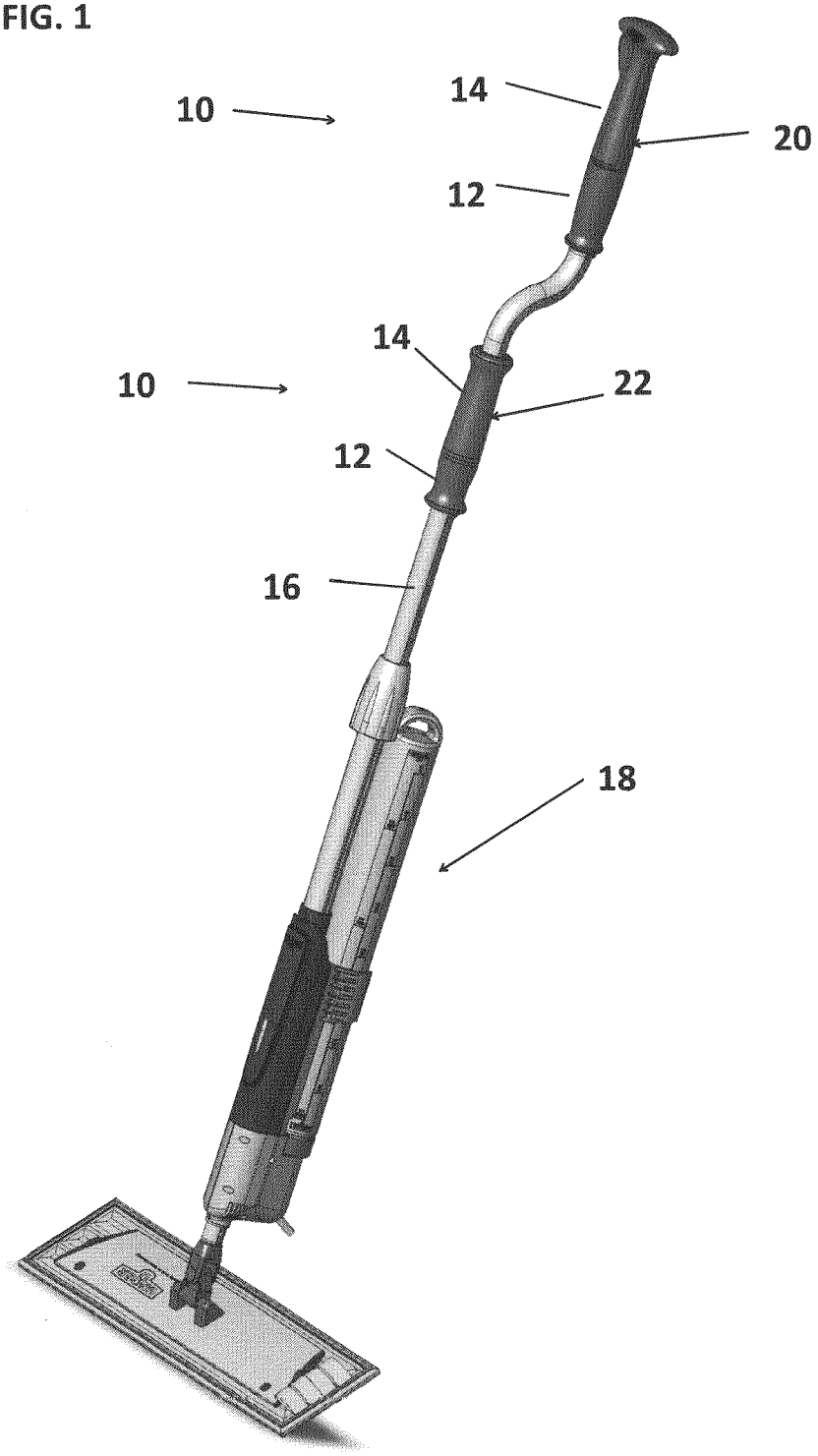


FIG. 2

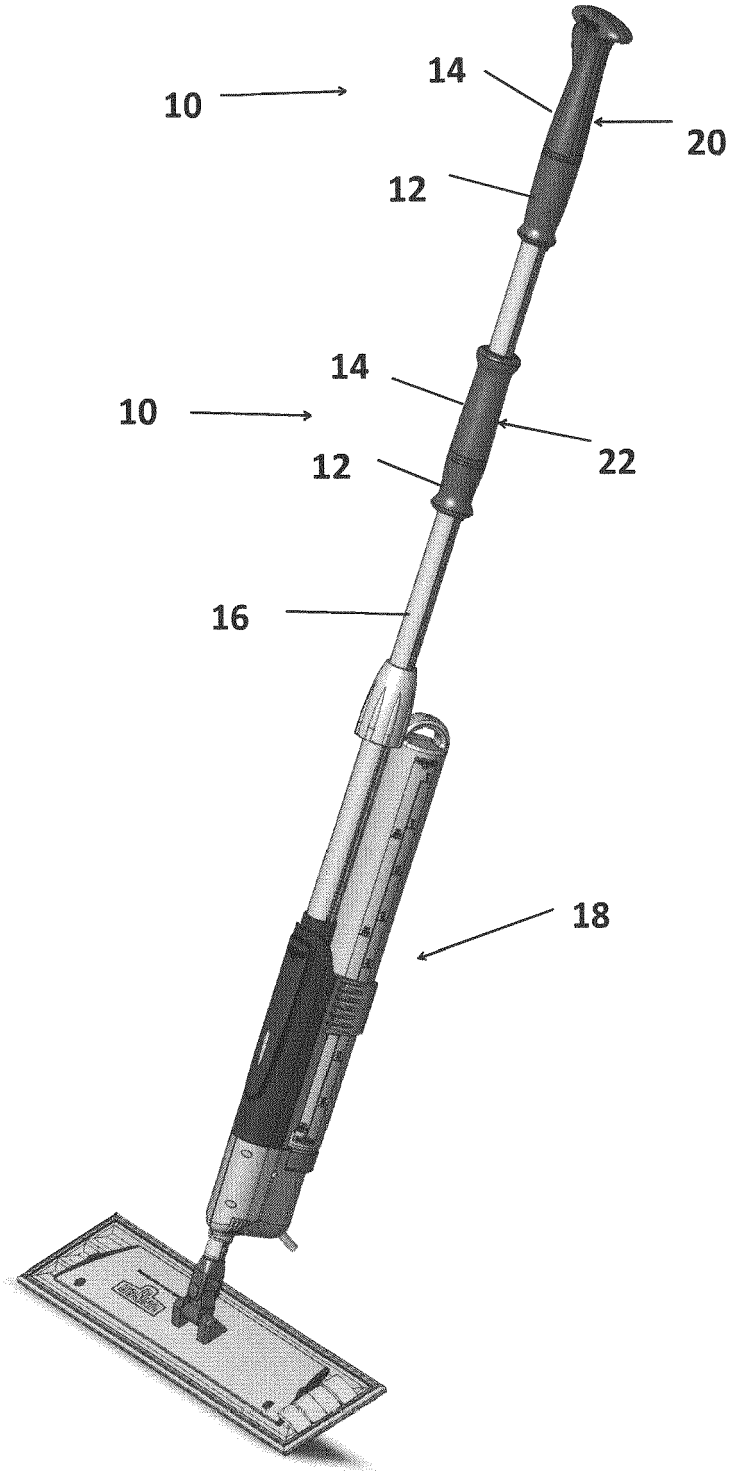


FIG. 3

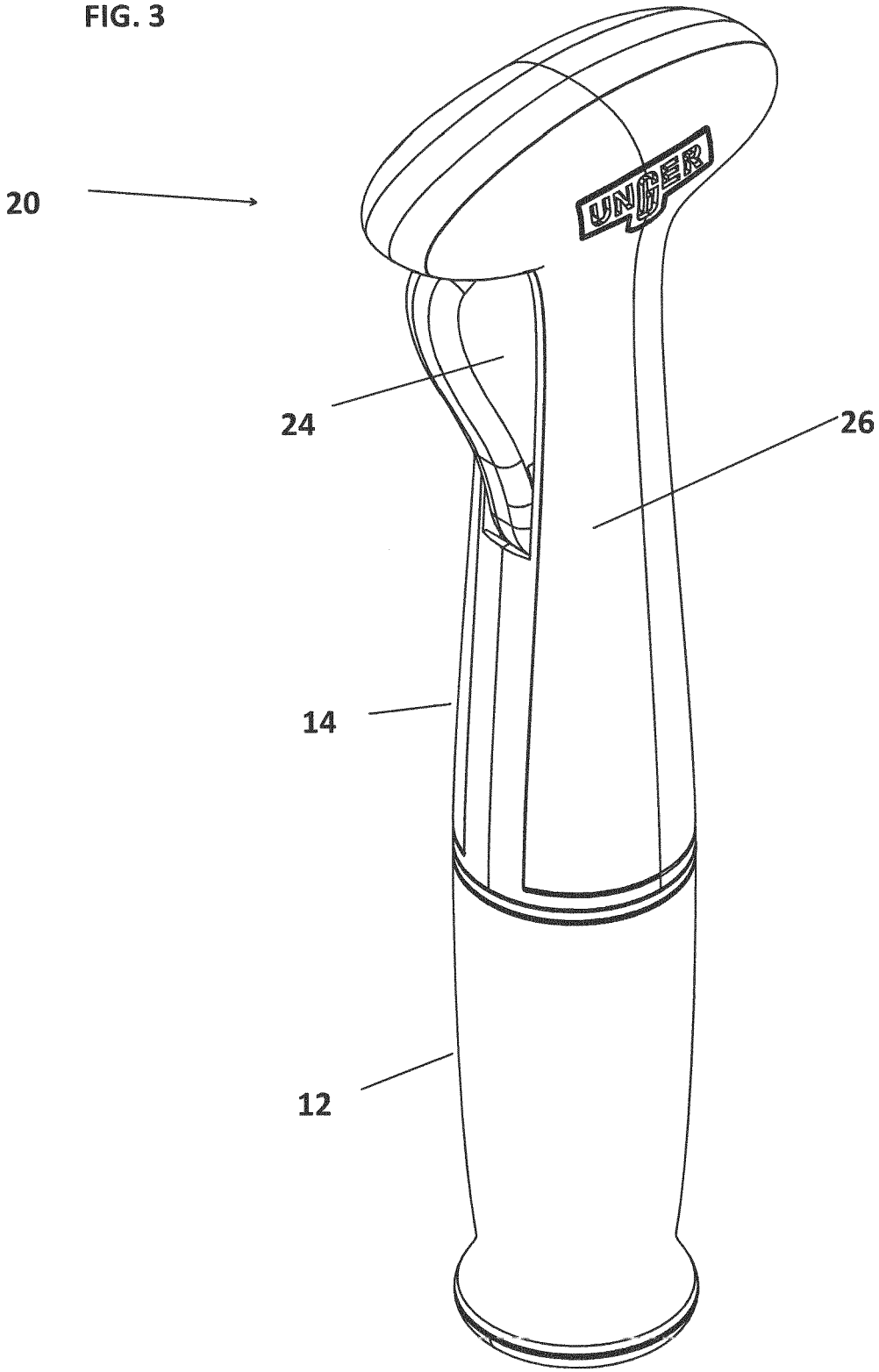


FIG. 4

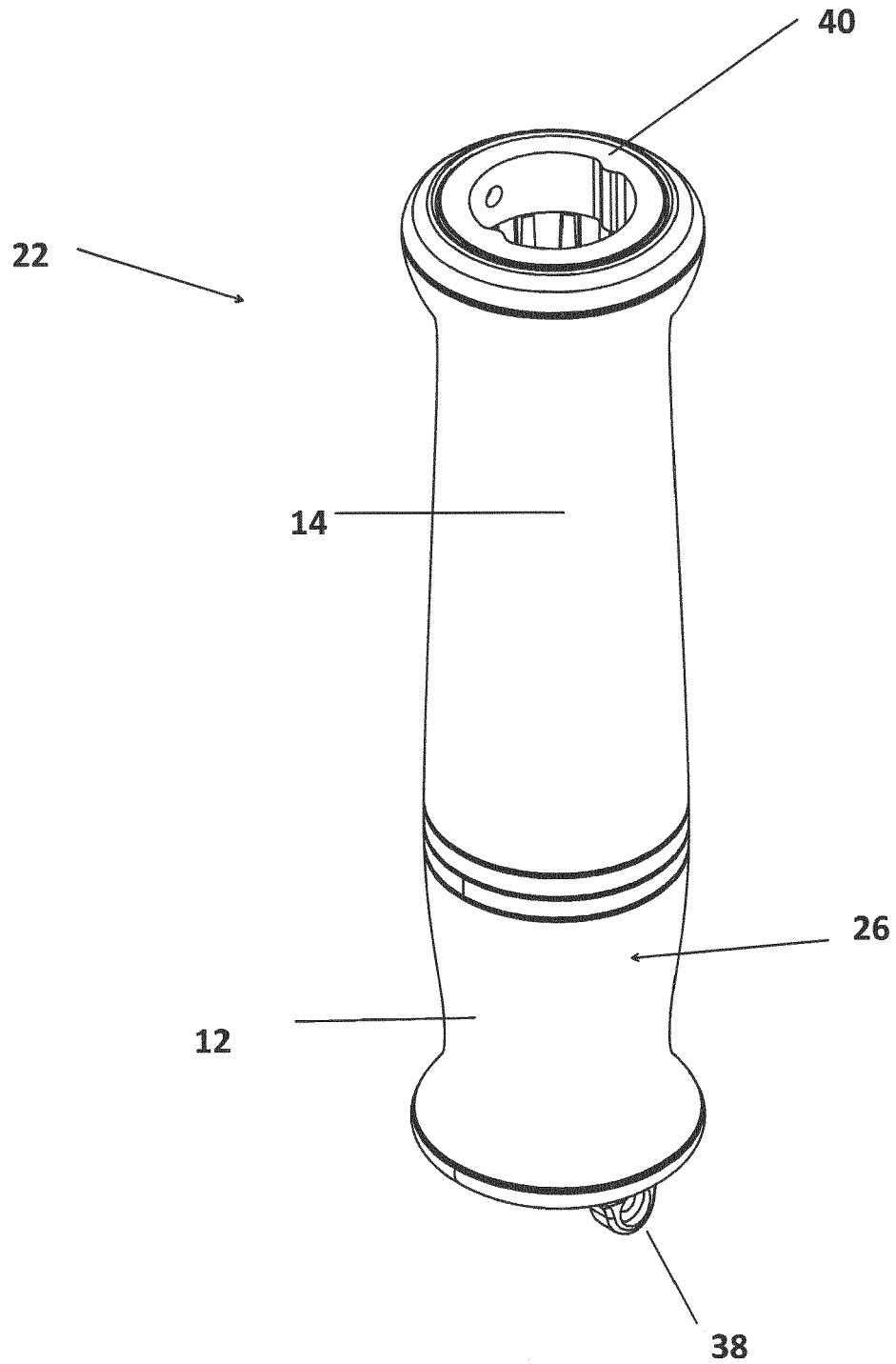


FIG. 5

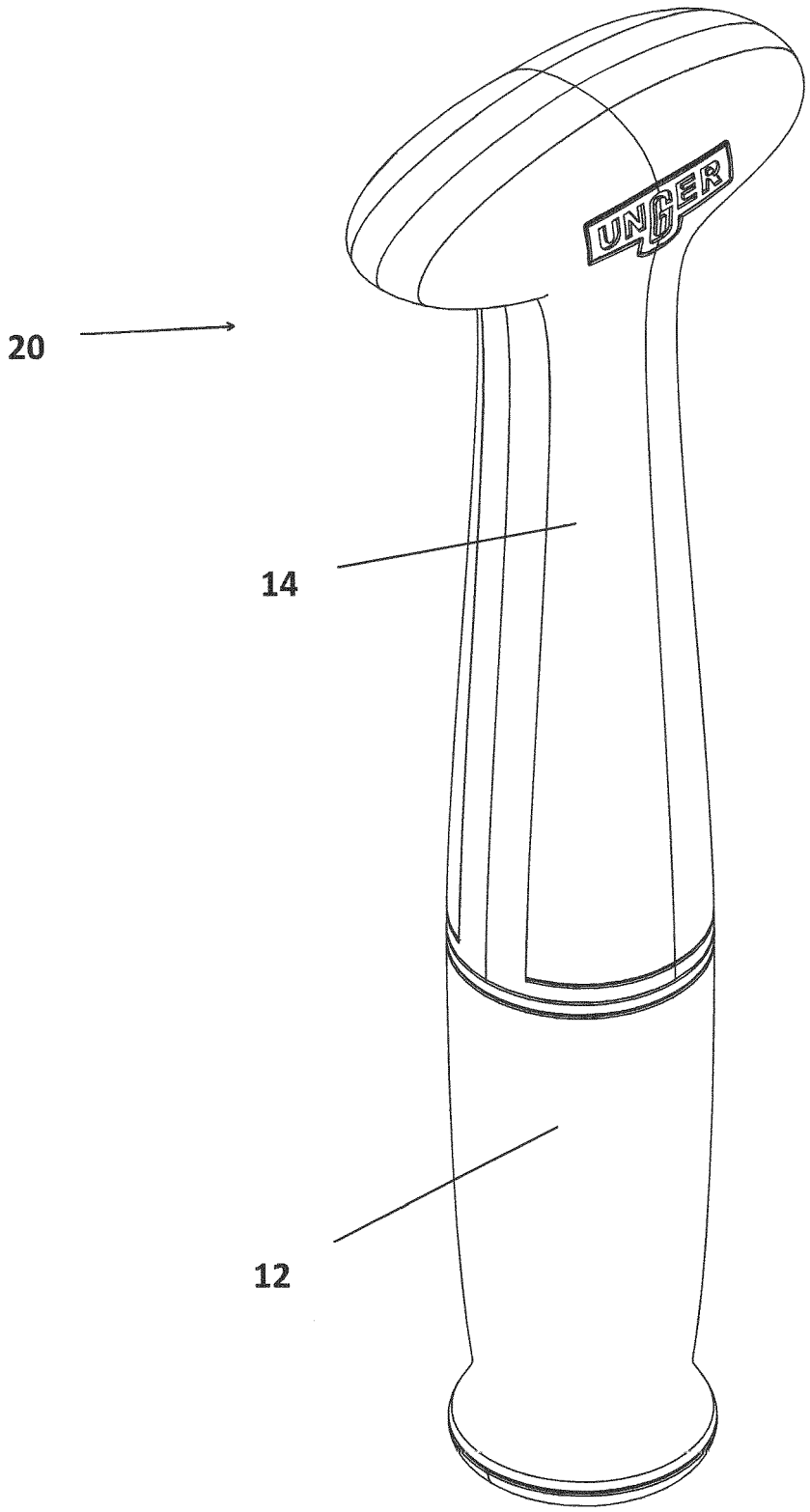


FIG. 6

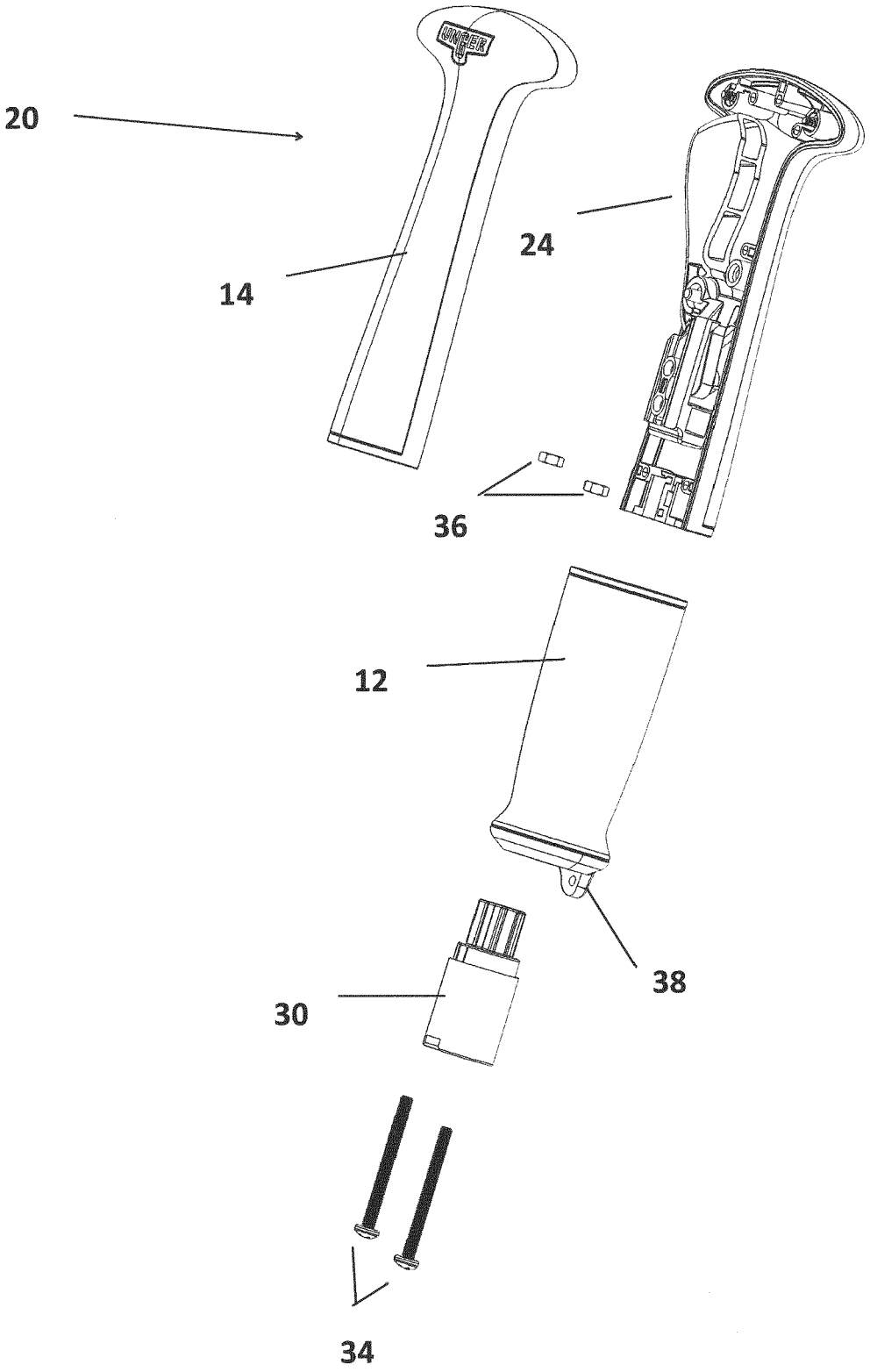


FIG. 7

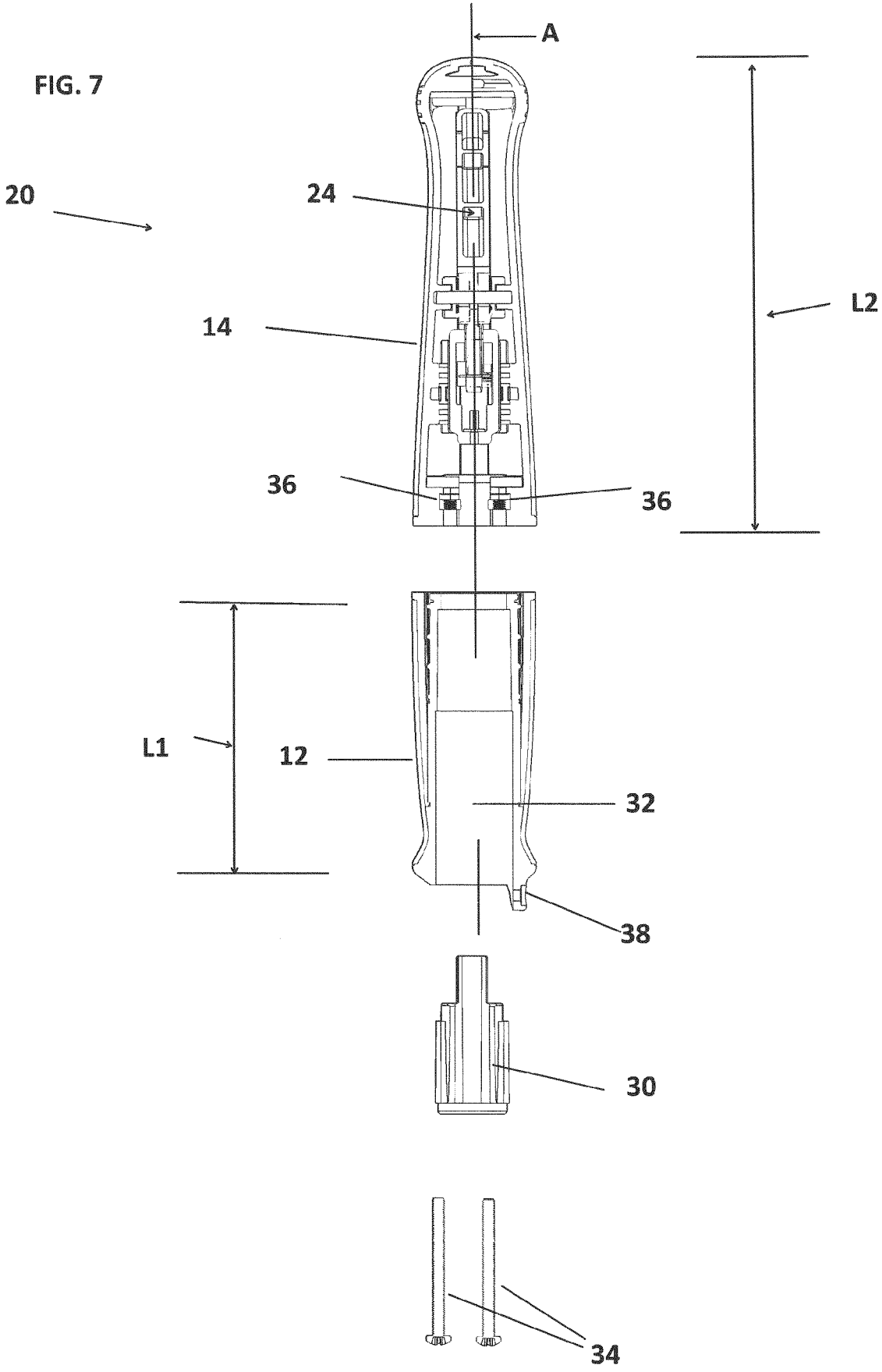
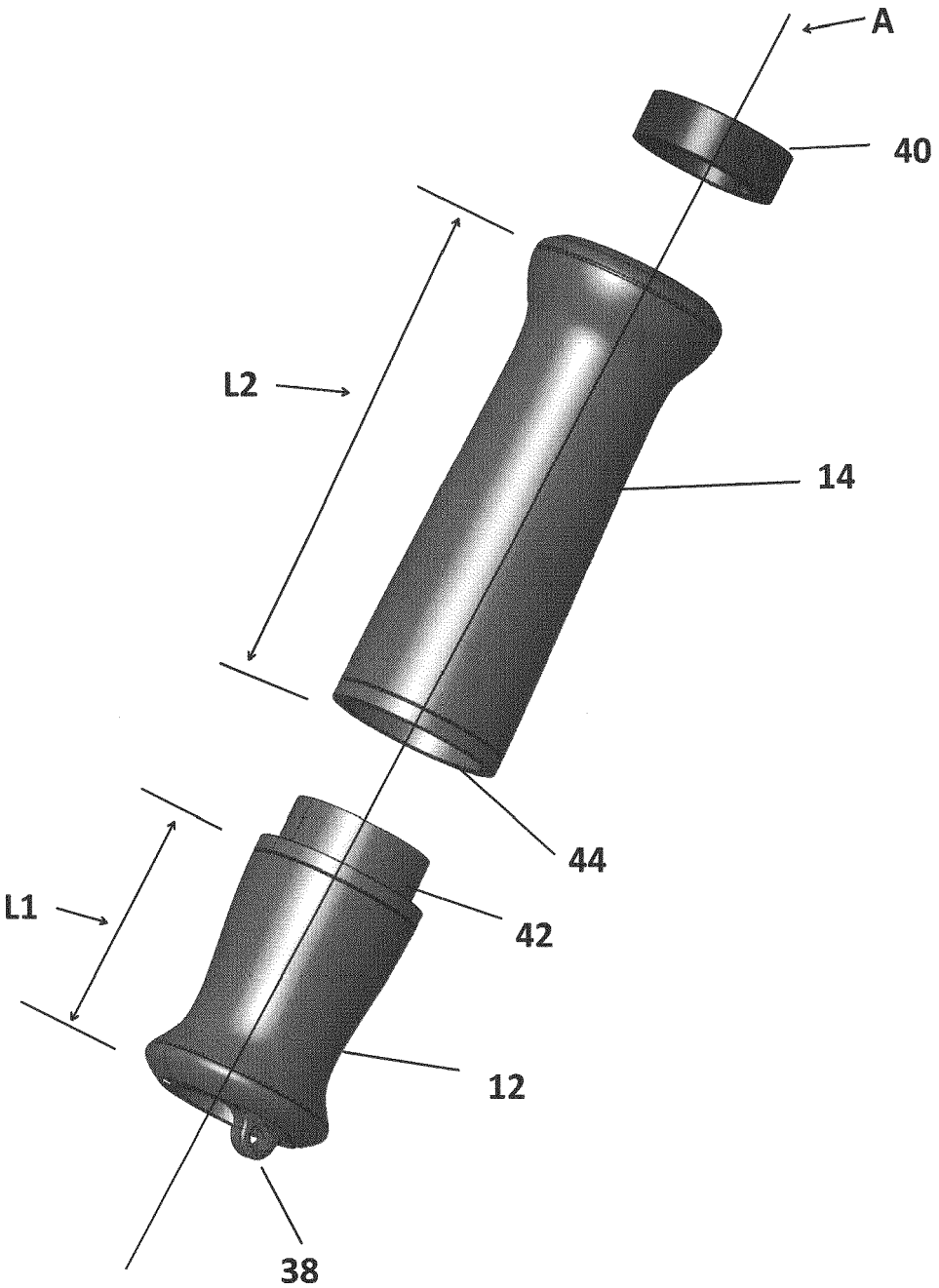


FIG. 8



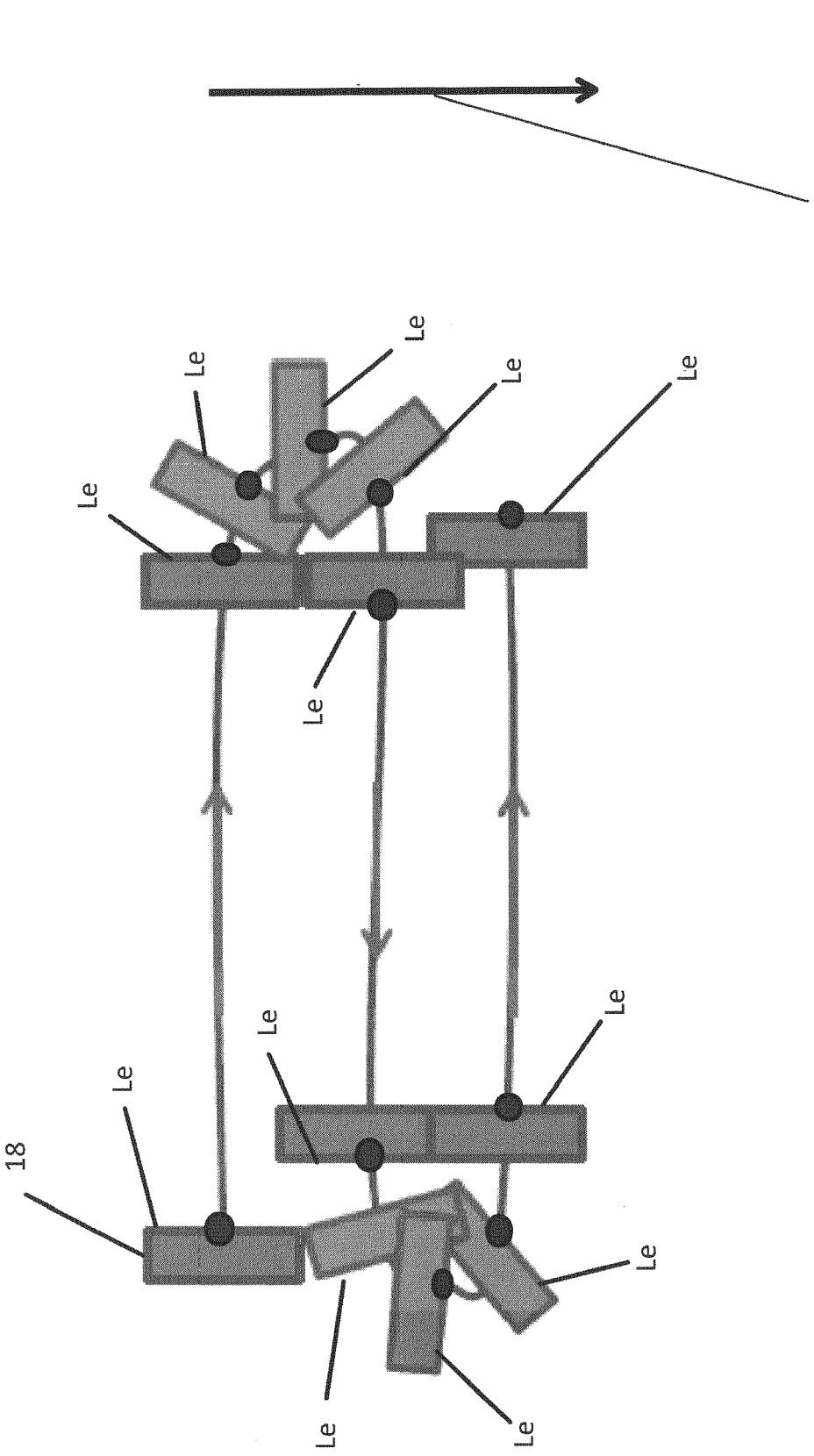


FIG. 9

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 18 19 3135

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 105 266 731 A (GUANGDAXING INC CO) 27 January 2016 (2016-01-27) * claim 1; figures 1,2,3,4 *	1-21	INV. A47L13/20 A47L13/42
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