(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 May 2017 (18.05.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/083374 A1

(51) International Patent Classification:
*A47K 11/10* (2006.01) *A47L 13/46* (2006.01)

(21) International Application Number:
PCT/US2016/061118

(22) International Filing Date:
9 November 2016 (09.11.2016)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2015-0159724
13 November 2015 (13.11.2015) KR

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,

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(54) Title: CLEANING TOOL HAVING AN EASILY DETACHABLE WEB

(57) Abstract: The present disclosure relates to a cleaning tool having an easily detachable web. Specifically, according to one exemplary embodiment of the present disclosure, there is provided a cleaning tool having an easily detachable web, the cleaning tool including a handle capable of being gripped by a user and having a front surface portion and a rear surface portion, a body having one surface connected to the handle and the other surface configured as an attachment surface from which a web for cleaning is detachable, and a pushing unit connected to the body via a hinge to be pivotable and causing the web that has been attached to the attachment surface to be easily separated when pivoted about the hinge.

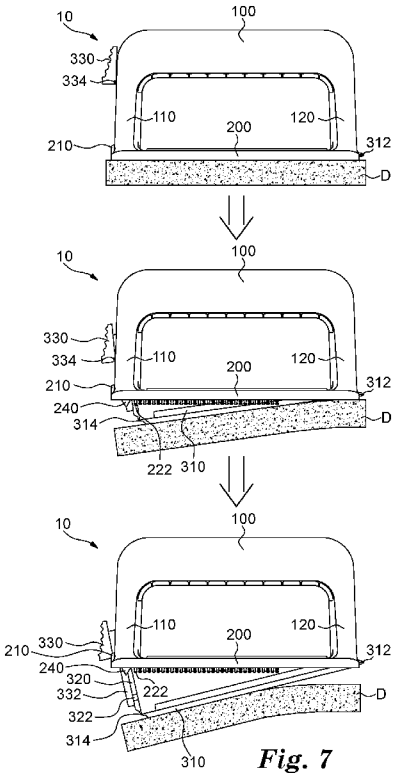


*Fig. 7*

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LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Published**:

— *with international search report (Art. 21(3))*

# CLEANING TOOL HAVING AN EASILY DETACHABLE WEB

## TECHNICAL FIELD

The present disclosure relates to cleaning tools having an easily detachable web.

## BACKGROUND

There are various types of cleaning tools used by consumers. Non-limiting examples of such cleaning tools include a sponge, a mop, a broom, and a brush, all of which have been used for a long time. Cleaning tools have various forms and functions depending on locations and circumstances in which the cleaning tools are used. One exemplary cleaning device is described in (Patent Literature 1) Korean Patent Registration No. 10-1470188.

Some cleaning tools include a detergent that can be applied to a surface of a non-woven material, and the non-woven material may be used to rub a wall surface to remove contaminants. Such cleaning tools can be used, for example, in locations including bathrooms where contaminants including bacteria and fungi are easily generated on wall surfaces due to a large amount of moisture.

Some disposable toilet bowl scrubbers (DTBS) are manufactured so that a detergent is drawn out upon contact with moisture without requiring the detergent to be applied to a surface of the non-woven web. When using the DTBS, the web can be gripped while wearing rubber gloves or can be attached to a tool to perform cleaning. Direct contact between the web and the user's skin is undesirable because the cleaning detergent may negatively affect the user's skin.

Cleaning tools configured so that a web can be attached and used generally include a handle for a user to hold the cleaning tool by hand, and an attachment unit to which the web is attachable. The non-woven web gripped by or attached to the cleaning tool may become dirty after use, and the dirty web should be replaced. For this, the attachment unit may be configured so that a web is detachable.

## SUMMARY

The inventors of the present disclosure recognized a need to improve cleaning tools to satisfy various demands of consumers including, for example, making cleaning tools easily usable and sanitary, and/or decreasing dangers of injuries to users during cleaning. More specifically, the inventors of the present disclosure recognized that when separating a dirty web from a conventional cleaning tool, the separation should be done with a handle held by one hand and the web by the other hand. Accordingly, there is an inconvenience in that the user's hand becomes dirty in the process of separating the web. Sometimes, gloves need to be worn to prevent the

hand from becoming dirty. In addition, because the conventional cleaning tool needs to include both the handle and the attachment unit from which the web is detachable, the conventional cleaning tool has a somewhat complex structure. As a result, the manufacturing process for making the tool is not simple, thus causing a problem in that the manufacturing cost is high and the processing time of a manufacturing process is unnecessarily long. The inventors of the present disclosure sought to eliminate or minimize these drawbacks of conventional toilet brushes.

Some embodiments of the present disclosure relate to a cleaning tool having an easily detachable web. The cleaning tool includes (1) a handle capable of being gripped by a user having a front surface portion and a rear surface portion, (2) a body having one surface connected to the handle and the other surface configured as an attachment surface from which a web for cleaning is detachable, and (3) a pushing unit connected to the body via a hinge to be pivotable and causing the web that has been attached to the attachment surface to be separated when pivotally rotated about the hinge.

In some embodiments, the cleaning tools have an easily detachable web in which the handle, the body, and the pushing unit are integrally formed.

In some embodiments, the cleaning tools have an easily detachable web in which the hinge is configured as a molding hinge, and the handle, the body, and the pushing unit are integrally molded.

In some embodiments, the cleaning tools have an easily detachable web in which the pushing unit includes a button provided to be manipulated by a user's hand, an insert bar connected to the button, and a push bar having one end connected to the insert bar and the other end connected to the body.

In some embodiments, the cleaning tools have an easily detachable web in which an insertion groove into which the insert bar may be inserted is formed recessed inside the front surface portion of the handle by passing through the body.

In some embodiments, the cleaning tools have an easily detachable web in which a sliding guide protrudes from one surface of the insert bar of the pushing unit, and the button is connected to an end portion of the sliding guide.

In some embodiments, the cleaning tools have an easily detachable web in which a guide hole penetrated toward outside of the front surface portion to communicate with the insertion groove is formed in the handle, and the sliding guide becomes accommodated in the guide hole when the insert bar is inserted into the insertion groove.

In some embodiments, the cleaning tools have an easily detachable web, the cleaning tool further including a separation preventing member formed at a point where the front surface portion and the body are connected to each other and having a separation preventing groove formed

recessed at a point thereof touching the guide hole, and in which a fixing tab protrudes from an end portion of the button connected to the sliding guide, and the fixing tab becomes accommodated in the separation preventing groove when the button has reached the separation preventing member by sliding along the front surface portion such that the button is prevented from deviating from the front surface portion.

In some embodiments, the cleaning tools have an easily detachable web in which a click groove is formed recessed at an inner wall surface of the front surface portion that forms the insertion groove, a click protrusion protrudes from both side surfaces of the insert bar, and the click groove is formed at a position at which the click protrusion may be accommodated when the insert bar is completely inserted into the insertion groove.

In some embodiments, the cleaning tools have an easily detachable web in which the insertion groove is formed in a shape having a width progressively widening in front and rear directions toward the body.

In some embodiments, the cleaning tools have an easily detachable web, the cleaning tool further including a first hinge that connects the push bar and the body to each other to be pivotable, and a second hinge that connects the push bar and the insert bar to each other to be pivotable, wherein the first hinge and the second hinge may be configured as molding hinges.

In some embodiments, the cleaning tools have an easily detachable web in which a slot into which the push bar may be inserted is formed at a central portion of the body, and the push bar pivots about the first hinge to be inserted into the slot and assembled.

In some embodiments, the cleaning tools have an easily detachable web in which a fixing protrusion that protrudes from a boundary of the slot is formed at the attachment surface of the body, and the position of the web attached to the attachment surface is fixed by the fixing protrusion to prevent the web from being pushed out from the attachment surface.

In some embodiments, the cleaning tools have an easily detachable web in which a hook for attachment of the web is formed at the attachment surface, the hook includes a head unit having an upper surface formed in a round shape and a pole unit connected to a lower surface of the head unit, the lower surface of the head unit is configured to have an area larger than that of a joining surface of the pole unit, and the upper surface digs into and is locked to a surface of the web so that the web is gripped by the hook.

In some embodiments, the cleaning tools have an easily detachable web in which the attachment surface of the body is divided as a hook present region with the hook and a hook absent region without the hook, wherein the hook present region is formed at a side connected to the front surface portion, and the hook absent region is formed at a side connected to the rear surface portion.

In some embodiments, the cleaning tools have an easily detachable web in which at least a portion of the surfaces of the handle is formed by insertion molding to which a rubber material is applied.

According to embodiments of the present disclosure, a dirty web can be conveniently separated from a cleaning tool just by using one hand, and a manufacturing process of the cleaning tool is simplified.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view illustrating a state in which a web is attached to a cleaning tool according to an embodiment of the present disclosure.

FIG. 2 is a perspective view illustrating a state in which a pushing unit of the cleaning tool of FIG. 1 is unfolded from a body.

FIG. 3 is a cross-sectional view illustrating a state in which an insert bar of FIG. 1 is inserted into an insertion groove formed inside a front surface portion of a handle.

FIG. 4 is a cross-sectional view illustrating a state in which the insert bar of FIG. 1 is not inserted into the insertion groove formed inside the front surface portion of the handle.

FIG. 5 is a perspective view illustrating a shape of an attachment surface of the body of FIG. 1.

FIG. 6 is a lateral view illustrating a shape of a hook of FIG. 5.

FIG. 7 is a view for describing a process in which the web that has been gripped by the cleaning tool of FIG. 1 is separated from the cleaning tool by the pushing unit.

## DETAILED DESCRIPTION

Hereinafter, specific embodiments for realizing the spirit of the present disclosure will be described in detail with reference to the drawings. Here, it should be noted that the drawings are not drawn with consistent proportions for convenience of description. In addition, in describing the present disclosure, when detailed descriptions of known related elements or functions are deemed to obscure the gist of the present disclosure, the detailed descriptions thereof will be omitted.

FIG. 1 is a perspective view illustrating a state in which a web is attached to a cleaning tool according to an embodiment of the present disclosure.

Referring to FIG. 1, a cleaning tool 10 according to an embodiment of the present disclosure is used with a web D attached thereto, and a user may rub the web D on a portion which needs to be cleaned such as a wall surface to perform cleaning using a detergent applied on the web D or drawn out of the web D. For this, the cleaning tool 10 includes a handle 100 which

may be gripped by the user, a body 200 having an attachment surface from which the web D may be detached, and a pushing unit 300 for separating the web D attached to the attachment surface of the body 200.

Here, the web D may be a member formed with a nonwoven material or may be formed with a foamed material such as a sponge and a disposable toilet bowl scrubber (DTBS). The web D may be used with a detergent applied on a surface thereof or may be manufactured in a form in which a solid detergent is coated on the surface thereof. In addition, in the case of the web D manufactured in a form in which a solid detergent is coated on the surface thereof, the solid detergent may include a cleaner substance, and the cleaner substance may be one of calcium carbonate, potassium carbonate, sodium carbonate, sodium bicarbonate, and sodium metasilicate, for example. The web D may be easily attached to the cleaning tool 10 by a hook to be described below (222, FIG. 5) formed in the cleaning tool 10, and a user may easily separate the attached web D from the cleaning tool 10 just by slightly pushing the attached web D away from the hook 222.

Hereinafter, a detailed configuration of the cleaning tool 10 will be described with reference to FIGS. 2 to 4. FIG. 2 is a perspective view illustrating a state in which a push bar of the cleaning tool of FIG. 1 is unfolded from a body, FIG. 3 is a cross-sectional view illustrating a state in which an insert bar of FIG. 1 is inserted into an insertion groove formed inside a front surface portion of a handle, and FIG. 4 is a cross-sectional view illustrating a state in which the insert bar of FIG. 1 is not inserted into the insertion groove formed inside the front surface portion of the handle.

Referring to FIGS. 2 to 4, the handle 100, the body 200, and the pushing unit 300 which configure the cleaning tool 10 may be integrally formed. Accordingly, the handle 100, the body 200, and the pushing unit 300 may be manufactured by being integrally molded, and a plastic material having elasticity may be used as a material for molding.

Specifically, the pushing unit 300 may be connected to the body 200 via a first hinge 312, and the first hinge 312 may be configured with a molding hinge. Here, the molding hinge refers to a hinge having a shape of a thin plate manufactured by molding and which is pivotable within a predetermined range of angle due to a very small thickness compared to those of surrounding portions.

In this way, as the pushing unit 300 is configured to be pivotable in two directions with respect to the body 200 by the first hinge 312, the pushing unit 300 having been unfolded from the body 200 may be fastened to the body 200 and the handle 100 by pivoting about the first hinge 312 as illustrated in FIG. 2. In addition, as the pushing unit 300 pivots about the first hinge 312, the web D that has been attached to the attachment surface of the body 200 may be pushed to be

separated from the attachment surface. Here, the handle 100 is connected to one surface of the body 200, and the attachment surface to which the web D is attached is formed at the other surface of the body 200.

The handle 100 may be formed in a C-shape, and both ends thereof may be connected to the body 200. However, this is merely an example, and the shape of the handle 100 may be modified into any shape so long as the shape can be easily gripped by the user. In addition, the handle 100 may have a front surface portion 110 and a rear surface portion 120. Although a portion including one end connected to the body 200 is defined as the front surface portion 100, and a portion including the other end is defined as the rear surface portion 120 for convenience in this embodiment, this is merely an example.

In addition, an insertion molding unit of a rubber material may be formed at a portion of the surfaces of the handle 100. For example, the insertion molding unit of a rubber material applied to the handle 100 may be formed at a portion of a surface coming into contact with the user's hand and, further, may be formed across surfaces toward outer portions of the front surface portion 110 and the rear surface portion and an upper surface of a portion in which the front surface portion 110 and the rear surface portion 120 are connected to each other, of FIG. 1. The insertion molding unit of a rubber material may prevent the user's hand from sliding while cleaning is being performed and may improve the aesthetics of a product itself since various colors and patterns can be applied to the product due to a characteristic of the insertion molding technique.

An insertion groove 114 into which an insert bar 320 that forms the pushing unit 300 may be inserted is formed recessed in the front surface portion 110 of the handle 100 by passing through the body 200, and a guide hole 112 penetrated toward outside of the front surface portion 110 to communicate with the insertion groove 114 may be formed. The guide hole 112 may also pass through the body 200 like the insertion groove 114 to be recessed from the front surface portion 110 and may have a width smaller than that of the insertion groove 114. In addition, a click groove 116 capable of accommodating a click protrusion 332 to be described below may be formed recessed at an inner wall surface of the front surface portion 110 that forms the insertion groove 114.

A separation preventing member 210 is formed at a point where the front surface portion 110 of the handle 100 and the body 200 are connected to each other, and a separation preventing groove 212 is formed recessed at a point where the separation preventing member 210 touches the guide hole 112. A fixing tab 334 disposed at a button 330 to be described below may be accommodated in the separation preventing groove 212, and the button 330 may be prevented from deviating from the insertion groove 114 provided at the front surface portion 110 of the handle 110 while the fixing tab 334 is accommodated in the separation preventing groove 212.

Meanwhile, the pushing unit 300 may include the button 330 provided to be manipulated by the user's hand, the insert bar 320 connected to the button 330, and a push bar 310 having one end connected to the insert bar 320 and the other end connected to the body 200. As described above, the push bar 310 is connected to the body 200 via the first hinge 312 to be pivotable, and the push bar 310 and the insert bar 320 are connected to each other via a second hinge 314. Here, the first hinge 312 may be formed at a point where the rear surface portion 120 of the handle 100 and the body 200 are connected to each other, but the present disclosure is not limited thereto.

In addition, the second hinge 314 may also be formed with a molding hinge like the first hinge 312. Accordingly, the insert bar 320 may be inserted into the insertion groove 114 by pivoting about the second hinge 314 toward the front surface portion 110 of the handle 100 with respect to the push bar 310 while the push bar 310 is close to the body 200 due to pivoting about the first hinge 312.

The insert bar 320 may have a shape that may be inserted into the insertion groove 114 formed at the front surface portion 110 of the handle 100, and a sliding guide 332 may protrude from a central portion of one surface of the insert bar 320. Accordingly, the sliding guide 332 may be guided while accommodated in the guide hole 112 to be inserted into the insertion groove 114 when the insert bar 320 is being inserted into the insertion groove 114. Here, since the insertion groove 114 has a shape having a width progressively widening in front and rear directions toward the body 200, the insert bar 320 and the sliding guide 332 may be easily inserted thereinto.

In addition, the click protrusion 322 may protrude from both side surfaces of the insert bar 320, and a click hole 324 may be formed at portions from which the click protrusion 332 protrudes. In relation to this, the click groove 116 formed at the inner wall surface that forms the insertion groove 114 of the front surface portion 110 is formed at a position at which the click protrusion 332 may be accommodated when the insert bar 320 is completely inserted into the insertion groove 114 so that one surface of the push bar 310 corresponds to a surface that serves as the attachment surface of the body 200. Accordingly, when the sliding guide 332 slides by being guided through the guide hole 112, a clicking sensation may be felt by the user as the click protrusion 332 becomes accommodated in the click groove 116, and, after the click protrusion 332 becomes accommodated in the click groove 116, the insert bar 320 may remain inserted in the insertion groove 114 even when an external force sliding the sliding guide 332 disappears.

Meanwhile, the button 330 may be formed at an end portion of the sliding guide 332 that extends from the insert bar 320 and may be disposed to be spaced a predetermined distance apart from the insert bar 320. Accordingly, a portion of the sliding guide 332 may be exposed between the insert bar 320 and the button 330, and the portion of the sliding guide 332 having a width

smaller than that of the insert bar 320 may serve as a portion passing through an opening of the insertion groove 114 when the insert bar 320 begins to be inserted into the insertion groove 114.

In addition, a plurality of grooves may be continuously formed in a shape in which peaks and troughs are repeatedly formed on a surface of the button 330 coming in contact with a user's finger. This is to increase the area in contact with the user's finger when the user pushes the button 330 to increase the frictional force so that the user's finger is prevented from sliding. However, this is merely an example, and the shape of the button 330 may be freely modified within the scope not departing from the present disclosure.

In addition, the fixing tab 334 protrudes from an end portion of the button 330 connected to the sliding guide 332. The fixing tab 334 has a shape that may be accommodated in the separation preventing groove 212 described above. The fixing tab 334 is accommodated in the separation preventing groove 212 to prevent the button 330 from completely deviating from the front surface portion 110 when the user pushes the button 330 along the front surface portion 110 to separate the web D while the insert bar 320 is inserted into the insertion groove 114.

Meanwhile, the body 200 may be formed in a shape of a plate including one surface and another surface on opposite side thereof, and a slot 202 is formed at a central portion of the body 200 so that the push bar 310 to be described below of the pushing unit 300 is inserted thereinto. The slot 202 may be formed in a shape corresponding to that of the push bar 310, and the push bar 310 may be inserted into the slot 202 and assembled by pivoting about the first hinge 312.

In addition, the attachment surface to and from which the web D is attached and detached is formed at a surface at the opposite side of the surface of the body 200 connected to the handle 100. Hereinafter, a detailed configuration of the attachment surface of the body 200 will be described with reference to FIGS. 5 and 6. FIG. 5 is a perspective view illustrating a shape of an attachment surface of the body of FIG. 1, and FIG. 6 is a lateral view illustrating a shape of a hook of FIG. 5.

Referring to FIGS. 5 and 6, the attachment surface of the body 200 may include a hook present region 220 with the hook 222 provided for attaching the web D and a hook absent region 230 without the hook 222. The hook present region 220 and the hook absent region 230 may be formed at both sides of the slot 202, the hook present region 220 may each be formed at a side connected to the front surface portion 110, and the hook absent region 230 may be formed at a side connected to the rear surface portion 120. In addition, areas of the hook present region 220 and the hook absent region 230 may be provided in a predetermined ratio, *e.g.,* 1:3. However, the present disclosure is not limited thereto, and the ratio between areas of the hook present region 220 and the hook absent region 230 may be freely modified within the scope not departing from the present disclosure.

In this way, as the attachment surface is divided as the hook present region 220 and the hook absent region 230, a portion to which the web D is attached may be limited to a portion of the attachment surface. Thus, separating the web D from the cleaning tool 10 may be facilitated using the pushing unit 300. However, although the case in which the attachment surface includes the hook absent region 230 is described as an example in the embodiment, the attachment surface may also be modified so that the hook 222 is formed throughout the entire attachment surface in some cases. In this case, separating the web D may become somewhat difficult, but an attaching force of the web D may be strengthened by the same amount.

In addition, the hook 222 may have a wedge-like shape and may be configured with, for example, a head unit 2222 and a pole unit 2224 connected to the head unit 2222. Here, the head unit 2222 is configured to have an upper surface formed in a round shape and a lower surface connected to the pole unit 2224 having a larger area than a joining surface of the pole unit 2224. In this way, the upper surface of the head unit 2222 digs into and is locked to a surface of the web D so that the web D is gripped. In addition, a corner portion of the head unit 2222 is formed in an area that is suitable instead of being excessively large compared to that of the pole unit 2224 so that an excessive force is not required when detaching the web D attached to the hook 222.

Meanwhile, a fixing protrusion 240 may be formed on the boundary of the slot 202. The fixing protrusion 240 may have a triangular pyramidal shape, for example, and may protrude near four vertices of the boundary of the slot 202. However, this is merely an example, and the present disclosure need not be limited by the position at which the fixing protrusion 240 is formed. The fixing protrusion 240 serves to fix the position of the web D so that the web attached to the hook 222 is not pushed out from the attachment surface in a direction of rubbing the web D while cleaning is being performed.

Hereinafter, actions and effects of the cleaning tool 10 having the configuration described above will be described.

The cleaning tool 10 may be integrally molded to be manufactured in the form illustrated in FIG. 2. To use the cleaning tool 10 manufactured in such way, the pushing unit 300 should be fastened to the body 200 and the handle 100. The fastening process may be described as follows. First, the push bar 310 pivots about the first hinge 312 toward the body 200. Then, the insert bar 320 pivots about the second hinge 314, causing a portion of the sliding guide 332 exposed between the button 330 and the insert bar 320 to be inserted into the insertion groove 114. Then, the click protrusion 332 approaches the click groove 116 as the button 330 slides and ascends along the front surface portion 110, and the push bar 310 is inserted into the slot 202 at the point when the click protrusion 332 becomes accommodated in the click groove 116. The pushing unit 300 may

be fastened to the body 200 and the handle 100 through the process above, and the web D may be attached to the attachment surface in this state to be used for cleaning.

The web D becomes dirty as cleaning using the cleaning tool 10 is repeated, and the web D that is extremely dirty and cannot be used for cleaning anymore should be replaced. For the replacement, first, the web D should be separated from the cleaning tool 10. A process of separating the web D will be described with reference to FIG. 7.

FIG. 7 is a view for describing a process in which the web that has been gripped by the cleaning tool of FIG. 1 is separated from the cleaning tool by the pushing unit.

Referring to FIG. 7, when the user pushes the button 330 toward the web D with respect to the front surface portion 110 to separate the web D, the web D is pushed by the push bar 310 and first begins to be separated from the hook 222 formed near the front surface portion 110. The push bar 310 continuously pushes the web D as the button 330 is continuously pushed toward the body 200, and the web D may be finally separated from all the hooks 222 when the button 330 is completely pushed up to the body 200. Here, the fixing tab 334 formed at the button 330 is accommodated in the separation preventing groove 212 of the separation preventing member 210 so that the button 330 is prevented from completely deviating from the front surface portion 110.

A web D that is done being used may be completely separated from the attachment surface through the process above. After separating the web D is finished, a new web D may be attached to the attachment surface to be used while the push bar 310 is accommodated in the slot 202 again by pushing the button 330 upward along the front surface portion 110 again.

According to the cleaning tool 10 according to an embodiment of the present disclosure described above, a dirty web D can be conveniently replaced just by pushing the button 330 using one hand, and, since the cleaning tool 10 may be integrally manufactured by molding, the manufacturing process of the cleaning tool 10 can be simplified.

Although a specific embodiment of the cleaning tool having an easily detachable web of the present disclosure has been described above, this is merely an example, and the present disclosure is not limited thereto. The present disclosure should be construed as having the broadest scope according to the basic spirit disclosed herein. Those of ordinary skill in the art may combine or substitute the embodiments disclosed herein to practice the present disclosure in patterns not specifically described herein, which is intended to fall within the scope of the present disclosure. Other than above, those of ordinary skill in the art may change or modify the embodiments disclosed herein, and it is apparent that the changes or modifications also belong to the scope of the present disclosure.

What is claimed is:

1. A cleaning tool having an easily detachable web, the cleaning tool comprising:

a handle configured to be gripped by a user and have a front surface portion and a rear surface portion;

a body having one surface connected to the handle and the other surface configured as an attachment surface from which a web for cleaning is detachable; and

a pushing unit connected to the body via a hinge to be pivotable and, causing the web that has been attached to the attachment surface to be separated when pivotally rotated about the hinge.

2. The cleaning tool of claim 1, wherein the handle, the body, and the pushingunit are integrally formed.

3. The cleaning tool of claim 2, wherein:

the hinge is configured as a molding hinge; and

the handle, the body, and the pushing unit are integrally molded.

4. The cleaning tool of claim 1, wherein the pushing unit includes:

a button provided to be manipulated by a user's hand;

an insert bar connected to the button; and

a push bar having one end connected to the insert bar and the other end connected to the body.

5. The cleaning tool of claim 4, wherein an insertion groove into which the insert bar is insertable is formed recessed inside the front surface portion of the handle by passing through the body.

6. The cleaning tool of claim 5, wherein a sliding guide protrudes from one surface of the insert bar of the pushing unit, and the button is connected to an end portion of the sliding guide.

7. The cleaning tool of claim 6, wherein:

a guide hole penetrated toward outside of the front surface portion to communicate with the insertion groove is formed in the handle; and

the sliding guide becomes accommodated in the guide hole when the insert bar is inserted into the insertion groove.

8. The cleaning tool of claim 6, further comprising a separation preventing member formed at a point where the front surface portion and the body are connected to each other and having a separation preventing groove formed recessed at a point thereof touching the guide hole, wherein:

a fixing tab protrudes from an end portion of the button connected to the sliding guide; and

the fixing tab becomes accommodated in the separation preventing groove when the button has reached the separation preventing member by sliding along the front surface portion to prevent the button from deviating from the front surface portion.

9. The cleaning tool of claim 5, wherein:

a click groove is formed recessed at an inner wall surface of the front surface portion forming the insertion groove;

a click protrusion protrudes from both side surfaces of the insert bar; and

the click groove is formed at a position suitable for the click protrusion to be accommodated therein when the insert bar is completely inserted into the insertion groove.

10. The cleaning tool of claim 5, wherein the insertion groove is formed in a shape having a width progressively widening in front and rear directions toward the body.

11. The cleaning tool of claim 4, further comprising:

a first hinge configured to connect the push bar and the body to each other to be pivotable; and

a second hinge configured to connect the push bar and the insert bar to each other to be pivotable,

wherein the first hinge and the second hinge are configured as molding hinges.

12. The cleaning tool of claim 11, wherein:

a slot into which the push bar is insertable is formed at a central portion of the body; and

the push bar pivots about the first hinge to be inserted into the slot and assembled.

13. The cleaning tool of claim 12, wherein:

a fixing protrusion protruding from a boundary of the slot is formed at the attachment surface of the body; and

the position of the web attached to the attachment surface is fixed by the fixing protrusion to prevent the web from being pushed out from the attachment surface.

14. The cleaning tool of claim 1, wherein:

a hook for attachment of the web is formed at the attachment surface;

the hook includes a head unit having an upper surface formed in a round shape and a pole unit connected to a lower surface of the head unit;

the lower surface of the head unit is configured to have an area larger than that of a joining surface of the pole unit; and

the upper surface digs into and is locked to a surface of the web for the web to be gripped by the hook.

15. The cleaning tool of claim 14, wherein:

the attachment surface of the body is divided as a hook present region with the hook and a hook absent region without the hook; and

the hook present region is formed at a side connected to the front surface portion, and the hook absent region is formed at a side connected to the rear surface portion.

16.The cleaning tool of claim 1, wherein at least a portion of the surfaces of the handle is formed by insertion molding to which a rubber material is applied.

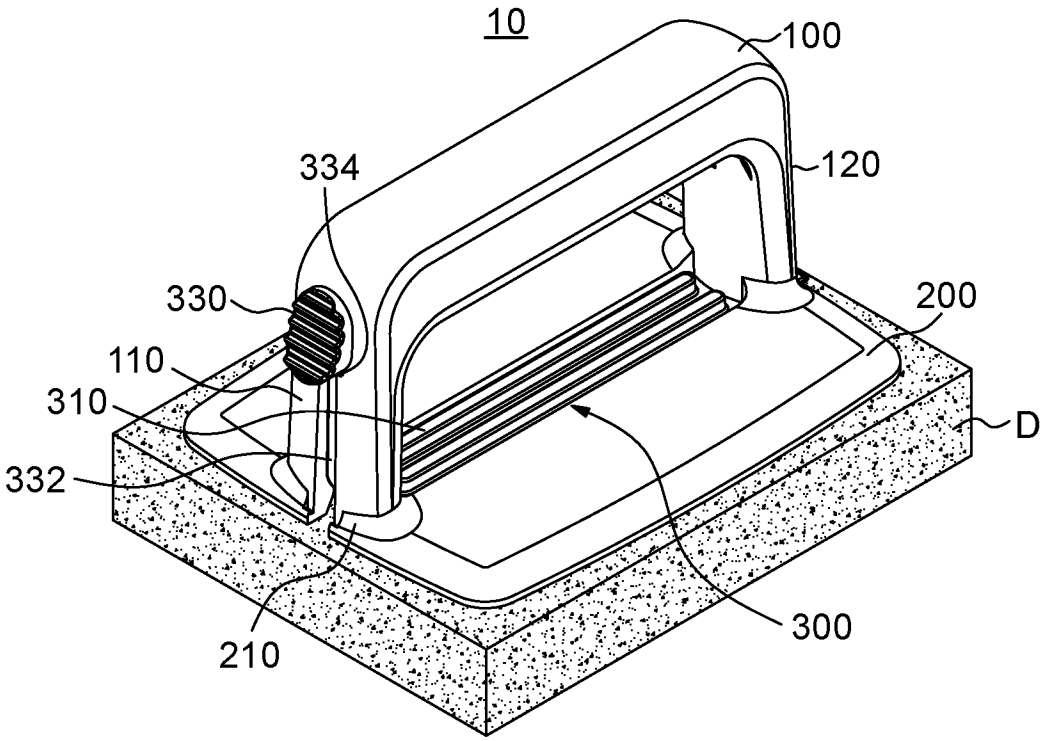
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*Fig. 1*

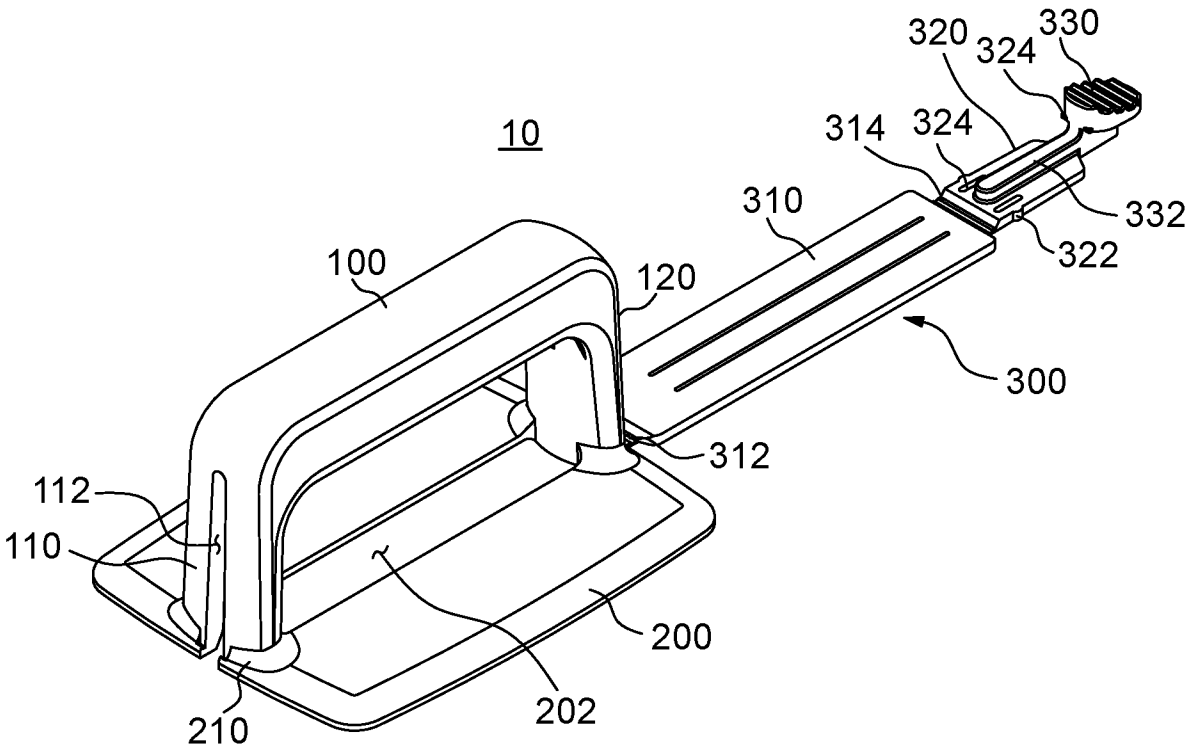
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*Fig. 2*

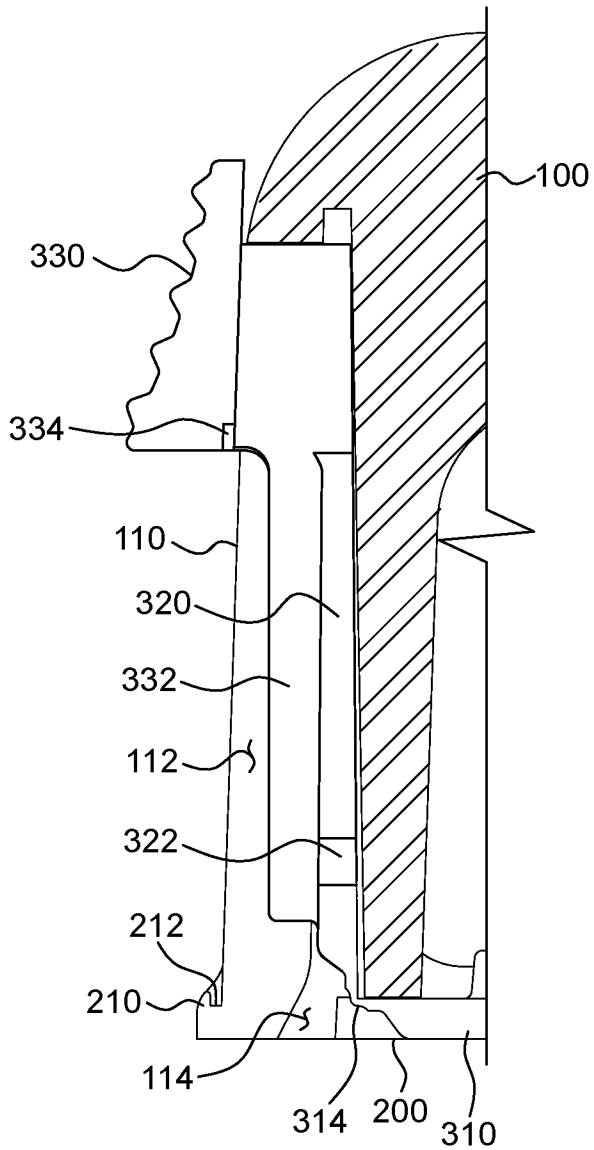
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*Fig. 3*

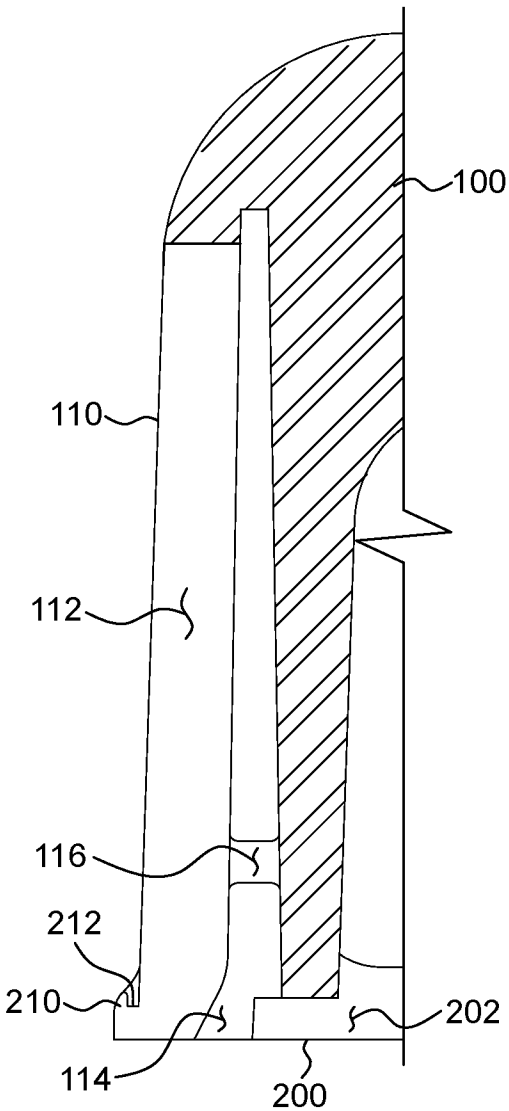
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*Fig. 4*

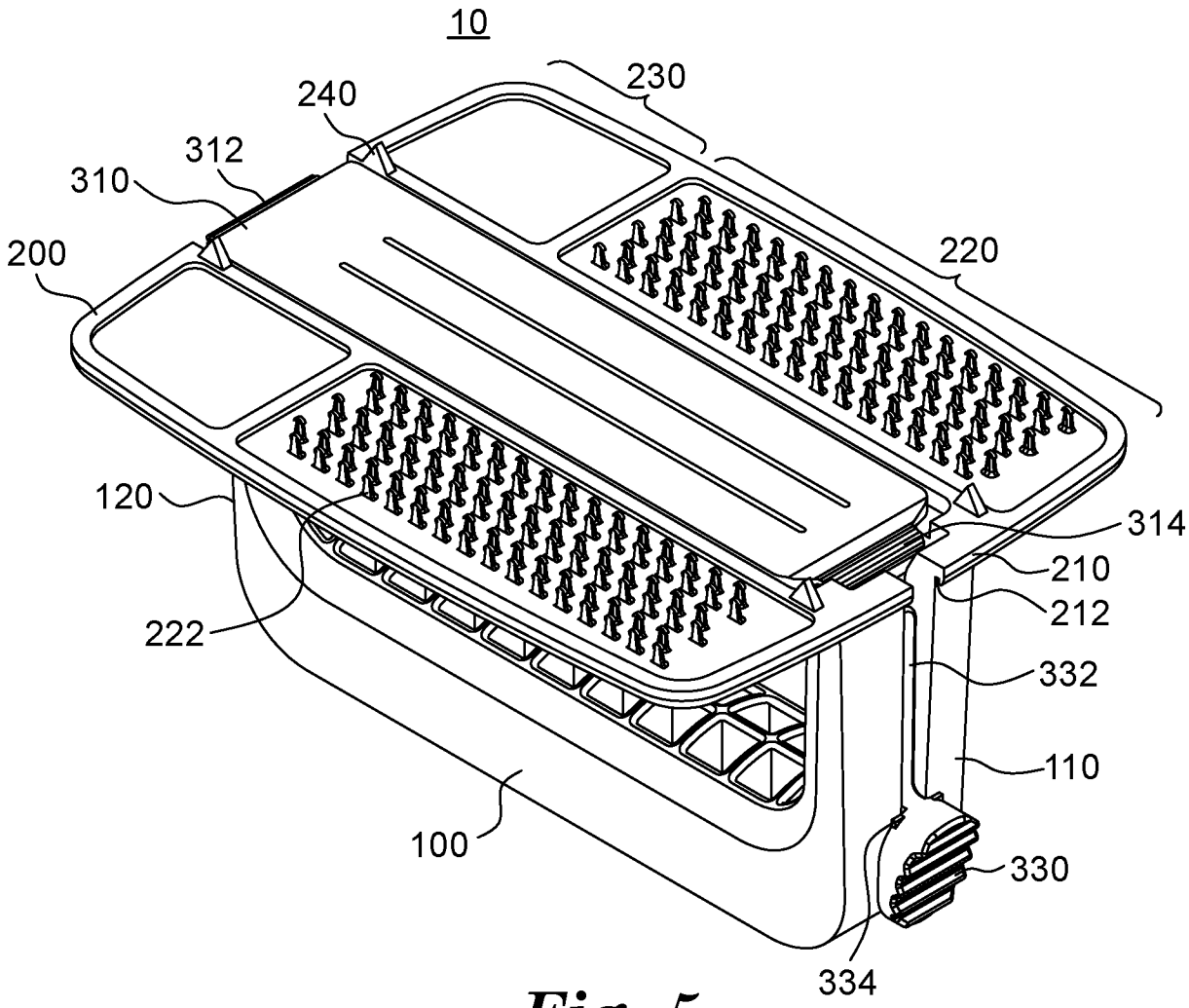
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*Fig. 5*

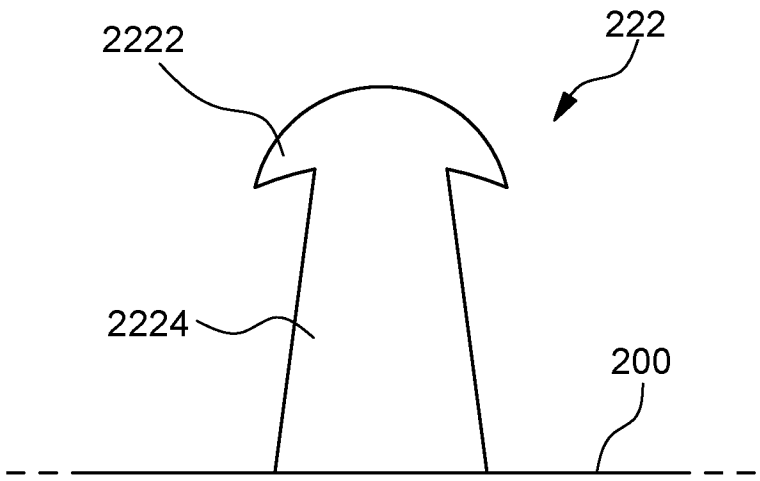
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*Fig. 6*

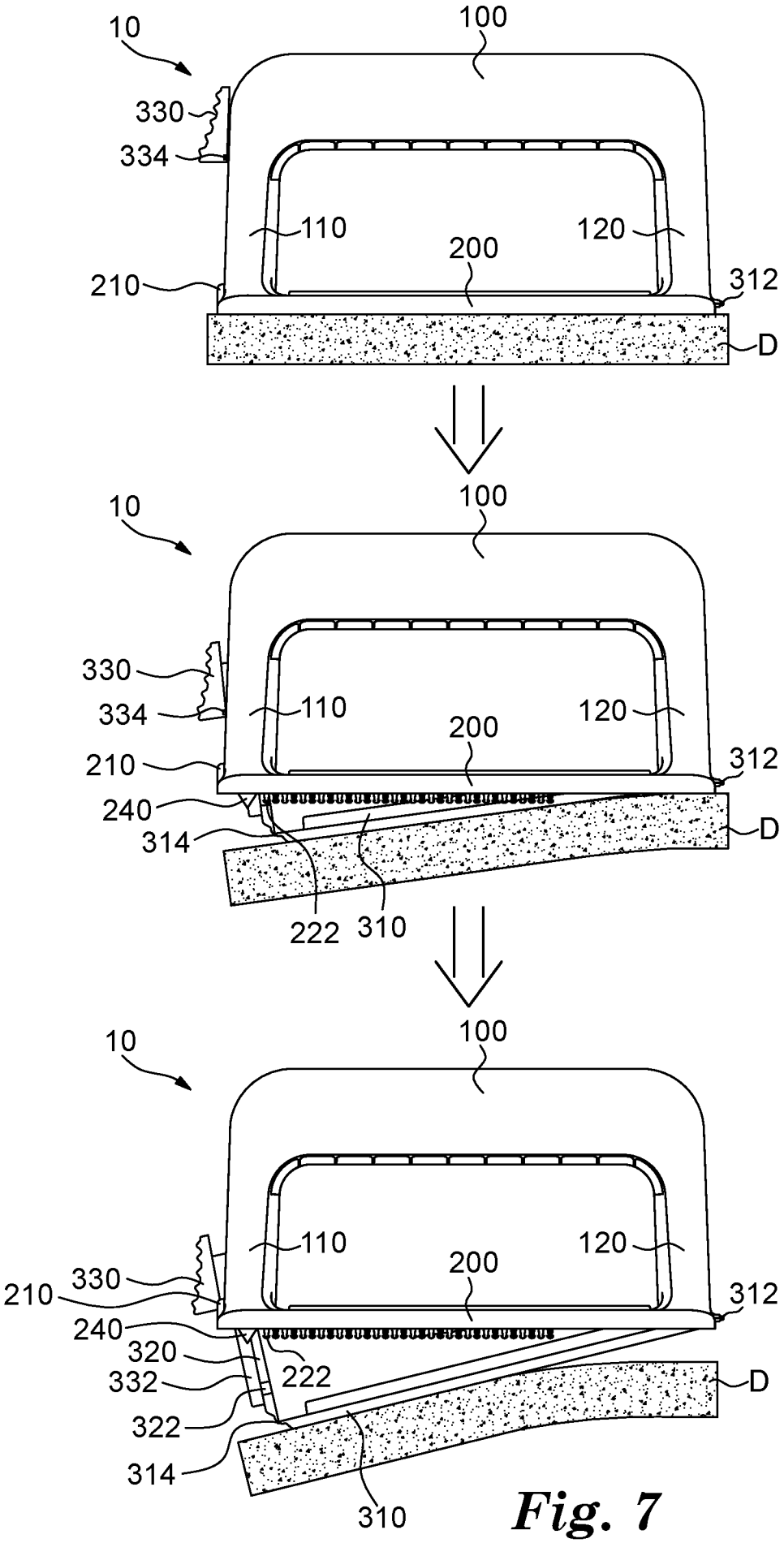
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*Fig. 7*

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/061118

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47K11/10 A47L13/46
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47K A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| A | page 15, paragraph 1 - page 16, paragraph 3; figures 1,2 | 4-9 |
| A | US 2014/251844 A1 (MICHELSON ROBERT [US] ET AL) 11 September 2014 (2014-09-11) paragraph [0022] - paragraph [0023]; figures | 1,14,15 |
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| A | US 4 071 983 A (THIELEN JAMES E) 7 February 1978 (1978-02-07) the whole document | 1 |

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 20 December 2016 | 05/01/2017 |

| Name and mailing address of the ISA/ | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Fordham, Alan |

1

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