(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 122 364 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.01.2023 Bulletin 2023/04

(21) Application number: **21186663.7**

(22) Date of filing: **20.07.2021**

(51) International Patent Classification (IPC):
A47L 4/02 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A47L 4/02

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **HUSQVARNA AB**
561 82 Huskvarna (SE)

(72) Inventor: **Mock, Axel**
89134 Blaustein (DE)

(74) Representative: **Finkele, Rolf**
Gardena Manufacturing GmbH
Hans-Lorenser-Straße 40
89079 Ulm (DE)

(54) **BLIND CLEANING DEVICE**

(57) A blind cleaning device **(100)** includes a body **(102)** defining a bracket **(104).** The blind cleaning device **(100)** also includes a pair of bristle plates **(134, 136)** coupled with the bracket **(104)** of the body **(102).** The body **(102)** is coupled with a fluid connection **(103)** which provides a fluid. The blind cleaning device **(100)** further includes a pair of bristle brushes **(150)** coupled with the pair of the bristle plates **(134, 136).** Each of the pair of bristle brushes **(150)** includes a plurality of bristles **(152).** The blind cleaning device **(100)** is characterized in that the pair of bristle brushes **(150)** are coupled with the pair of the bristle plates **(134, 136)** such that the pair of bristle brushes **(150)** contact each other to define a cleaning room **(156)** with the pair of the bristle plates **(134, 136).** Further, the fluid connection **(103)** supplies the fluid into the cleaning room **(156).**

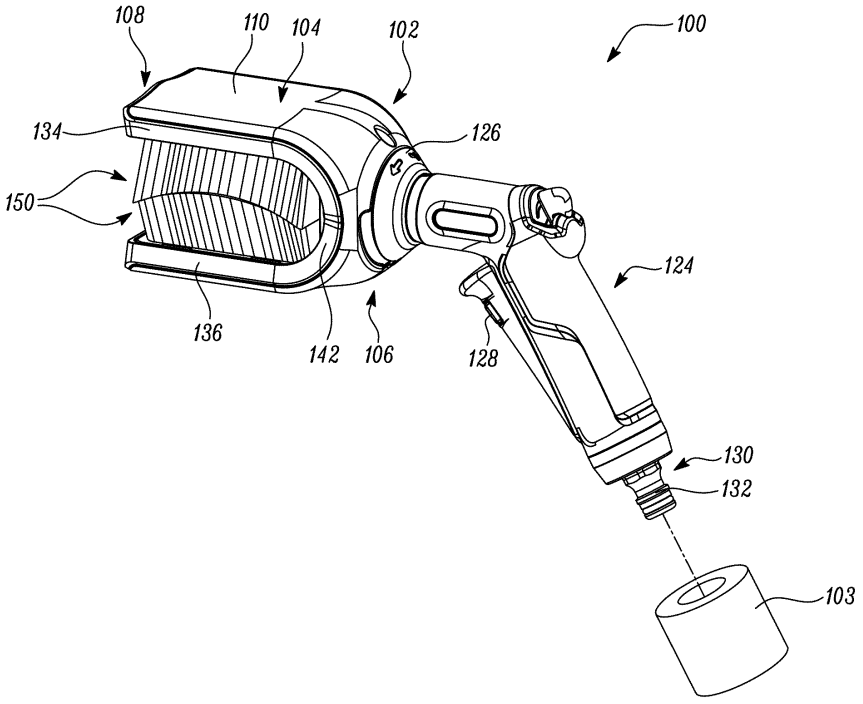

FIG. 1

EP 4 122 364 A1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to a blind cleaning device.

BACKGROUND

[0002] Window blinds are commonly installed in various spaces, such as commercial buildings or a residential space as part of an interior decoration of such spaces. The window blinds are used to regulate an amount of desired light in the space where they are installed. Further, the window blinds may block direct sunlight, promote energy conservation, and provide privacy.

[0003] The window blinds typically consist of multiple lamellae that are arranged in parallel. The lamellae are spaced apart from each other by a predefined distance. Generally, a number of controlling means are provided for controlling an angular position of the lamellae of the window blinds, such that the lamellae may be angularly rotated between an open position, which permits maximum passage of light through the window blinds, and a closed position, which provides maximum blockage of light through the window blinds. Over a period of time, dirt, dust, debris, particulate matter, and the like, may accumulate on the window blinds. Further, pathogens may also be present on the window blinds. Thus, such window blinds may have to be periodically cleaned. In applications where a large number of window blinds are installed, such as in the commercial buildings, individual cleaning of each lamella becomes a time consuming and laborious task.

[0004] Some cleaning devices, such as brushes, are available in the market to remove particles accumulated on the lamellae of the window blinds. These brushes typical use a friction surface and/or a vacuum to dislodge particles accumulated on the lamellae of the window blinds. However, some particles are well adhered to the surfaces of the lamellae which may be difficult to remove with such brushes. In some cases, greasy residues are needed to be removed from the lamellae. Further, particles accumulated on the lamellae of the window blinds tend to adhere to the greasy residues. Such greasy residues may not be completely removed with brushes that involve techniques such as friction and/or vacuum. Thus, there is a need for an improved cleaning device to clean the lamellae of the window blinds effectively, efficiently, and without causing user fatigue.

[0005] An example of a shutter slat cleaning accessory is provided in U.S. Patent Application 2017/0,127,891 (hereinafter referred to as '891 reference). The '891 reference discloses a cleaning tool for manually cleaning a variety of shutter slat types having a complex profile. The '891 reference includes various configurations of a cleaning glove and a modular system of various cleaning accessories that can be connected to the glove and easily disconnected therefrom. However, the cleaning accessory of the '891 reference includes multiple parts that are complex in design and assembly. Further, the cleaning accessory is cumbersome to use during cleaning process. Moreover, the cleaning tool seems short of providing any arrangement which allows to have convenient or controlled cleaning by application of any fluid (say water) associated with the cleaning tool.

SUMMARY

[0006] In view of the above, it is an objective of the present disclosure to solve or at least reduce the drawbacks discussed above. The objective is at least partially achieved by a new design of a blind cleaning device. The blind cleaning device includes a body defining a bracket. The blind cleaning device also includes a pair of bristle plates coupled with the bracket of the body. The body is coupled with a fluid connection which provides a fluid. The blind cleaning device further includes a pair of bristle brushes to couple with the pair of the bristle plates. Each of the pair of bristle brushes includes a plurality of bristles. The blind cleaning device is characterized in that the pair of bristle brushes are coupled with the pair of the bristle plates such that the pair of bristle brushes contact each other to define a cleaning room with the pair of the bristle plates. The fluid connection supplies the fluid into the cleaning room.

[0007] Thus, the present disclosure provides an improved blind cleaning device for desired cleaning applications, such as to clean the lamellae of window blinds effectively and efficiently. The blind cleaning device allows desired cleaning of the lamellae of the window blinds with the fluid connection providing the fluid, such as water. Further, the cleaning room avoids splashing of the fluid. Particularly, the cleaning room of the present disclosure allows to avoid splashing of the fluid around or through the bristle brushes. It should be noted that the blind cleaning device can be used for cleaning other components apart from window blinds, as applicable.

[0008] According to an embodiment of the present disclosure, the body is removably coupled with a fluid supply device for supply of the fluid. Such a removable attachment of the fluid supply device provides flexibility in terms of cleaning the lamellae of the window blinds with or without the fluid. The fluid from the fluid supply device can be used to provide improved cleaning of various surfaces with fluids. This arrangement also allows removable coupling of different attachments, such as brushes, showers, nozzle, and the like, with the fluid supply device.

[0009] According to an embodiment of the present disclosure, the blind cleaning device includes a rotatable joint between the body and the fluid supply device. The rotatable joint between the body and the fluid supply device provides improved ergonomics during cleaning (say of a soil-deep window). The rotatable joint allows angular disposition of the fluid supply device with respect to the body. Specifically, the fluid supply device may be at-

tached horizontally or vertically. In a horizontal position of the fluid supply device, the user may feel less weight during a cleaning operation. Further, a vertical position of the fluid supply device may create less disturbance during the cleaning operation.

[0010] According to an embodiment of the present disclosure, a hose connector is removably attached to the fluid supply device. The hose connector allows connection of the fluid supply device with the fluid connection or with a hose.

[0011] According to an embodiment of the present disclosure, at least one of the pair of bristle plates define one or more openings to allow discharge of the fluid therefrom. The one or more openings may be provided in a central portion of the bristle plates to allow discharge of the fluid, such as water, through the openings.

[0012] According to an embodiment of the present disclosure, the pair of bristle plates are substantially parallel and include a spring-loaded mechanism. This arrangement may allow cleaning of both sides of the lamella of the window blinds at the same time, thereby reducing user effort. Further, the spring-loaded mechanism may allow any adjustments or movement of the pair of bristle plates and thereby provide efficient cleaning of the lamellae. According to an embodiment of the present disclosure, the pair of bristle plates is height adjustable to change a distance between the pair of bristle plates. With the height adjustable arrangement of the bristle plates, the distance between the bristle plates may be adjusted if the bristles wear out. This height adjustable nature of the bristle plates may be due to the spring-loaded mechanism.

[0013] According to an embodiment of the present disclosure, the body includes an adjustable limitation stop for different lamella width. In some embodiments, the connecting portion includes the adjustable limitation stop. The adjustable limitation stop of the blind cleaning device may be adjusted for different lamella width, thereby making the blind cleaning device versatile and adaptable in use. The limitation stop may accommodate a jet that promotes efficient cleaning and water saving. The jet may be flat or conical. Further, different types of fluid jet, such as flat fluid jet, conical fluid jet, and the like, may be obtained by adjusting the limitation stop.

[0014] According to an embodiment of the present disclosure, the pair of bristle brushes are removably coupled with the pair of the bristle plates. This arrangement allows removable coupling of different types of bristle brushes for different window blinds and also allows replacement of the bristle brushes, such as for regular service and the like.

[0015] Other features and aspects of this disclosure will be apparent from the following description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The disclosure will be described in more detail with reference to the enclosed drawings, wherein:

FIG. 1 illustrates a perspective view of a blind cleaning device, in accordance with an aspect of the present disclosure;

FIG. 2 illustrates a perspective view of the blind cleaning device disassembled from a fluid supply device, in accordance with an aspect of the present disclosure;

FIG. 3 illustrates a cross-sectional view of the blind cleaning device about a vertical plane, in accordance with an aspect of the present disclosure;

FIG. 4 illustrates a perspective view of a body of the blind cleaning device and the fluid supply device in a second position, in accordance with an aspect of the present disclosure;

FIG. 5 illustrates an exploded view of a body and a pair of bristle plates of the blind cleaning device, in accordance with an aspect of the present disclosure;

FIG. 6A illustrates a top view of the blind cleaning device, in accordance with an aspect of the present disclosure; and

FIG. 6B illustrates a cross-sectional view of the blind cleaning device about a horizontal plane, in accordance with an aspect of the present disclosure.

DESCRIPTION OF EMBODIMENTS

[0017] The present disclosure will be described more fully hereinafter with reference to the accompanying drawings, in which example embodiments of the disclosure incorporating one or more aspects of the present disclosure are shown. This disclosure may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the disclosure to those skilled in the art. For example, one or more aspects of the present disclosure may be utilized in other embodiments and even other types of structures and/or methods. In the drawings, like numbers refer to like elements.

[0018] Certain terminology is used herein for convenience only and is not to be taken as a limitation on the disclosure. For example, "upper", "lower", "front", "rear", "side", "longitudinal", "lateral", "transverse", "upwards", "downwards", "forward", "backward", "sideward", "left," "right," "horizontal," "vertical," "upward", "inner", "outer", "inward", "outward", "top", "bottom", "higher", "above", "below", "central", "middle", "intermediate", "between", "end", "adjacent", "proximate", "near", "distal", "remote", "radial", "circumferential", or the like, merely describe the

configuration shown in the Figures. Indeed, the components may be oriented in any direction and the terminology, therefore, should be understood as encompassing such variations unless specified otherwise.

[0019] FIG. 1 is a perspective view of a blind cleaning device 100. The blind cleaning device 100 may be used for different cleaning applications, such as to clean a number of lamellae (not shown) of a window blind (not shown). The present disclosure illustrates a cleaning device as the blind cleaning device **100,** however actual implementation of the present disclosure may be applied with any cleaning device making use of one or more brushes, bristles and the like. The blind cleaning device **100** includes a body **102** defining a bracket **104.** The body **102** may be manufactured from a plastic, a metal, and the like. The body **102** may be embodied as a single piece unit or the body **102** may include multiple separate parts that are joined together to form the body **102.** The body **102** may be coupled with different types of cleaning attachments, such as, brushes, showers, nozzle, and the like. The body **102** is coupled with a fluid connection **103** which provides a fluid towards the blind cleaning device **100.** The fluid connection may include a tap, pump, and the like. Further, the fluid may include water or any other cleaning fluid.

[0020] Referring to **FIG. 2,** the bracket **104** defines a first end **106** and a second end **108.** Further, the bracket **104** of the body **102** includes a generally U-shaped structure herein. It should be noted that the bracket **104** may include any other shape and size, without limiting the scope of the present disclosure. The bracket **104** includes a first surface **110.** The bracket **104** also includes a second surface **112** (shown in **FIG. 5**). The bracket **104** also includes a number of projections **114** (shown in **FIG. 5**) on the second surface **112.** In the illustrated example, the bracket **104** includes four projections **114.** The body **102** includes an inlet portion **118.** The inlet portion **118** includes a threaded profile. Further, the inlet portion **118** defines a through-hole **144.**

[0021] **FIG. 3** shows the blind cleaning device **100,** in accordance with an embodiment of the present disclosure. In this embodiment, the body **102** includes a distributor **127.** The distributor **127** defines a T-shaped structure, although other shapes, types, dimensions, structure have been contemplated and are well within the scope. The distributor **127** includes an inlet channel **129** and two outlet channels **131.** The outlet channels **131** are substantially perpendicular to the inlet channel **129.** The inlet channel **129** is fluidly coupled to the inlet portion **118** of the body **102** for a fluid flow **"F"** (or simply the fluid), such as water for cleaning, therethrough. Further, the outlet channels **131,** receive the fluid flow **"F"** from the inlet channel **129** to supply the fluid flow **"F"** to each bristle plate **134, 136.** Each bristle plate **134,136** defines an inlet opening **135** and a number of outlet openings **137.** The fluid flow **"F"** from the outlet channels **131** of the distributor **127** enters the bristle plates **134, 136** through the inlet opening **135.** Further, the fluid flow **"F"** is then discharged through the outlet openings **137,** such as for applications involving cleaning of the lamella of the window blind and the like.

[0022] The present disclosure refers to the "fluid" or the "fluid flow" which have been used interchangeably for ease of explanation and understanding. The fluid flow **"F"** through the blind cleaning device **100** is illustrated in **FIG. 3** for detail flow from a hose connector **130** to a fluid supply device **124,** and then to the distributor **127** of the body **102.** This fluid flow **"F"** then splits in the distributor **127** to move towards each bristle plate **134, 136,** as illustrated in **FIG. 3.**

[0023] Further, the body **102** also includes an adjustable limitation stop **122** (shown in **FIG. 3**) for different lamella width. The limitation stop **122** may be integrated and work with the distributor **127** to allow splitting of the fluid i.e., water from the inlet channel **129** to the outlet channels **131.** In some embodiments, the blind cleaning device **100** may not include any limitation stop **122** and make application of the distributor **127.** In some embodiments, a connecting portion **142** (shown in **FIG. 4**) includes the adjustable limitation stop **122.** The limitation stop **122** includes a cylindrical body defining an inlet (not shown) and an outlet (not shown). The inlet is fluidly coupled to the inlet portion **118** of the body **102** to supply fluid, such as water for cleaning, therethrough. Further, the fluid is discharged through the outlet of the limitation stop **122.** The limitation stop **122** may accommodate a jet that allows discharge of fluid therethrough. Further, the limitation stop **122** can be adjusted for different lamella width. In some examples, the limitation stop **122** can be adjusted to accommodate the lamella width that approximately lies in a range of about 40 Millimeters (mm) to about 100 mm. Furthermore, the jet may be flat or conical. The limitation stop **122** may be adjusted to obtain different types of fluid jet, such as flat fluid jet, conical fluid jet, and the like. Specifically, the limitation stop **122** can be rotated to adjust a pattern of the jet. Further, the body **102** is removably coupled with the fluid supply device **124** for supply of the fluid. The inlet portion **118** of the body **102** allows removable coupling of the body **102** with the fluid supply device **124** using a rotatable joint **126.**

[0024] The blind cleaning device **100** also includes the fluid supply device **124.** The fluid supply device **124** includes an actuator **128** to allow passage of the fluid towards the body **102** of the blind cleaning device **100.** When actuated, the actuator **128** allows passage of fluid therethrough. It should be noted that the fluid supply device **124** may include any arrangement for passage of the fluid towards the body **102** of the blind cleaning device **100,** such as a button, a knob, a handle, and the like. The fluid supply device **124** includes a first inlet **116** and a first outlet **120.** Further, the hose connector **130** is removably attached to the fluid supply device **124.** The hose connector **130** is removably attached to the first inlet **116** of the fluid supply device **124.** The hose connector **130** includes a threaded section **132** to removably

couple a hose pipe (not shown) with the hose connector **130.** The hose pipe may supply the fluid from the fluid connection **103** towards the blind cleaning device **100.**

[0025] Further, the blind cleaning device **100** includes the rotatable joint **126** between the body **102** and the fluid supply device **124.** The rotatable joint **126** includes a cylindrical body, a joint inlet (not shown), and a joint outlet (not shown). The joint inlet is connected to the fluid supply device **124** and the joint outlet is removably coupled with the inlet portion **118** of the body **102.** The joint outlet may be partially received through the through-holes **144.** Further, the joint outlet may include a threaded section (not shown) for removable coupling with the inlet portion **118** of the body **102.** The rotatable joint **126** allows coupling of the body **102** of the blind cleaning device **100** with the fluid supply device **124** at various angles. The rotatable joint **126** between the body **102** and the fluid supply device **124** provides improved ergonomics during cleaning, such as of a soil-deep window (not shown).

[0026] In a first position or a vertical position, as illustrated in **FIGS. 1 to 3,** the rotatable joint **126** allows vertical coupling of the fluid supply device **124** with the body **102** of the blind cleaning device **100.** The first position of the fluid supply device **124** may create less disturbance for the user during the cleaning operation. Referring to **FIG. 4,** in a second position or a horizontal position, the rotatable joint **126** allows horizontal coupling of the fluid supply device **124** with the body **102** of the blind cleaning device **100.** In the second position of the fluid supply device **124,** the user may feel less weight during a cleaning operation. Further, the first/vertical and the second/horizontal positions of the rotatable joint **126** may allow different positions, angles, ergonomic styles for cleaning by the body **102** of the blind cleaning device **100.** Further, the present disclosure illustrates and discusses the first/vertical and the second/horizontal positions, however actual implementation may have many and other positions in between the first/vertical and the second/horizontal positions of the rotatable joint **126.**

[0027] Referring to **FIG. 5,** the blind cleaning device **100** also includes a pair of bristle plates **134,136** to couple with the bracket **104** of the body **102.** Specifically, the blind cleaning device **100** includes the first bristle plate **134** and the second bristle plate **136** facing the first bristle plate **134** and spaced apart from the first bristle plate **134.** The pair of bristle plates **134, 136** may be similar in shape and size. Alternatively, the bristle plates **134, 136** may include different shape and size. The bristle plate **134, 136** defines a first plate surface **138** and a second plate surface **140.** The first plate surface **138** of the bristle plate **134, 136** includes a generally planar profile. The first plate surface **138** includes a number receiving slots **146** to receive the projections **114** of the bracket **104.** The second plate surface **140** of the bristle plates **134, 136** includes a curved profile. The pair of bristle plates **134, 136** may be coupled to the bracket **104** using a snap-fit connection. It should be noted that the pair of bristle plates **134, 136** and the bracket **104** may be connected by any other means, without limiting the scope of the present disclosure.

[0028] The pair of bristle plates **134, 136** are connected with each other by the connecting portion **142.** In the illustrated example, the pair of bristle plates **134, 136** and the connecting portion **142** are embodied as an integral unit. Alternatively, the pair of bristle plates **134, 136** and the connecting portion **142** may be embodied as separate parts that are joined together. The pair of bristle plates **134, 136** and the connecting portion **142** form a generally U-shaped structure.

[0029] The pair of bristle plates **134, 136** are substantially parallel and include a spring-loaded mechanism (not shown). The spring-loaded mechanism of the bristle plates **134, 136** may allow some adjustment or movements thereof, and may exert a pressure on the lamella of the window blinds to effectively clean dirt particles from a surface of the lamella. Further, the spring-loaded mechanism and the fluid jet may allow efficient cleaning of greasy residue on the lamella surface.

[0030] As shown in **FIG. 5,** the blind cleaning device **100** further includes a pair of bristle brushes **150** coupled with the pair of the bristle plates **134, 136.** The pair of bristle brushes **150** are disposed on the second plate surface **140** and extend therefrom. Each of the pair of bristle brushes **150** includes the plurality of bristles **152.** The pair of bristles **152** of the pair of bristle brushes **150** overlap each other. The bristles **152** may be tilted and arranged in a shape **154** to suit the shape of the lamellae of the window blind. This arrangement may allow uniform cleaning of the lamella surface. The bristles **152** may include a first row of bristles that are disposed on an outer side of the bristle brushes **150** and a second row of bristles that are disposed on an inner side of the bristle brushes **150.** The first row of bristles may include soft bristles and the second row of bristles may include hard bristles. The first row of bristles and the second row of bristles may be in contact with each other.

[0031] The pair of bristle brushes **150** are removably coupled with the pair of bristle plates **134, 136.** More particularly, each bristle plate **134, 136** may include a bristle fixation element **155** (as shown in **FIG. 3**) to removably couple the pair of bristle brushes **150.** The bristle fixation element **155** can be removably coupled to the bristle plates **134, 136.** The bristle fixation element **155** may be made up of a soft plastic material. The bristle fixation element **155** allows removable coupling of the pair of bristle brushes **150** with the bristle plates **134, 136.** The removable coupling of the pair of bristle brushes **150** allows coupling of different types of bristle brushes, or removal during service intervals and the like. The bristles **152** of each bristle brush **134, 136** may be manufactured using a synthetic material, such as nylon. It should be noted that the bristles **152** may include any other material, without limiting the scope of the present invention.

[0032] Referring to **FIGS. 6A** and **6B,** different views of the blind cleaning device **100** is illustrated. As shown, at least one of the pair of bristle plates **134, 136** (see

FIGS. 6A and **6B,** respectively) define one or more openings **148** to allow discharge of the fluid therefrom. The one or more openings **148** are specifically provided to allow discharge or drainage of any excess amount or flow of the fluid during application of the blind cleaning device **100.** Such discharge or drainage of the fluid will take place, through the one or more openings **148,** substantially perpendicular to the first and second bristle plates **134, 136** leading to a simple, user-friendly, and splash-proof cleaning application by the blind cleaning device **100.** In the illustrated example, each of the first and second bristle plates **134, 136** includes the opening **148.** Alternatively, any one of the first and second bristle plates **134, 136** may include the opening **148.** The openings **148** of each bristle plate **134, 136** may be identical in shape and size. The openings **148** are centrally disposed within the bristle plates **134, 136,** however, actual implementations may have any position, type, size, placement, or number of the openings **148.** The fluid jet directed through the distributor **127** (with or without the limitation stop **122**) may split through the distributor **127** to discharge the fluid from the openings **148** provided on the bristle plates **134, 136** after cleaning the lamella surface. The pair of bristle brushes **150** are coupled with the pair of the bristle plates **134, 136** such that the pair of bristle brushes **150** contact each other to define a cleaning room **156** (shown in **FIG. 6B**) with the pair of the bristle plates **134, 136.** Specifically, the pair of bristle brushes **150** overlap each other, such that minimum efforts may be required to clean the lamella, and there may not be any undesired fluid spillage through or around the pair of bristle brushes **150.** Further, the fluid connection supplies the fluid into the cleaning room **156.** The cleaning room **156** defines an axis **"A"** (shown in **FIG. 3**) normal to each opening **148** of the bristle plates **134, 136.** Further, the cleaning room **156** may allow removal or discharge of the fluid (say water) therethrough. Particularly, the cleaning room **156** may allow the fluid to discharge along the axis **"A"** therethrough, to check or avoid any undesired splashing or movement of the fluid substantially perpendicular to the axis **"A".** Moreover, the arrangement of bristles **152** and the cleaning room **156** avoids splashing of fluid during cleaning process. Further, a front side **158** of the pair of bristle brushes **150** may be covered with a textile material, a rubber material, a plastic sheet, a foil sheet, and the like, for additional protection against the splashing of fluid.

[0033] The cleaning room **156** of the present disclosure is defined between the pair of the bristle plates **134, 136** and the pair of bristle brushes **150.** This may create a rectangular, square or any other geometrical shaped volume of the cleaning room **156,** which allows to receive and hold the fluid during cleaning by the blind cleaning device **100.** Further, the cleaning room **156** may allow discharge of the fluid through the opening **148,** while avoiding any undesired spillage or discharge of the liquid through or around the pair of bristle brushes **150.**

[0034] Further, the pair of bristle plates **134, 136** is height adjustable to change a distance **"D"** between the pair of bristle plates **134, 136.** The height adjustable bristle plates **134, 136** may be used to adjust the distance **"D"** between the pair of bristle plates **134, 136** when the plurality of bristles **152** of the pair of bristle brushes **150** wear out. More particularly, in an event of wear out of the bristles **152,** the bristle plates **134, 136** may be disposed closer to each other to compensate for a reduction in a length of the bristles **152.** This height adjustable nature of the bristle plates **134, 136** may be due to the spring-loaded mechanism. In some embodiments, the height adjustable nature of the pair of bristle plates **134,136** may allow to change the distance **"D"** and thereby change dimensions (i.e. volume) of the cleaning room **156.** Such change in the dimensions of the cleaning room **156** may be suitable for different applications or operational requirements, such as to control a rate of the fluid leaving the cleaning room **156** (say along the axis **"A").** In an alternate example, the bracket **104** of the blind cleaning device **100** may include a rectangular shape with rounded corners instead of the U-shaped structure. Further, in such an example, each bristle plate **134, 136** may be directly coupled with the rectangular bracket **104** using a number of mechanical fasteners and the connecting portion **142** may be omitted.

[0035] The present disclosure provides the improved blind cleaning device **100** to clean the lamellae of window blinds effectively and efficiently. The blind cleaning device **100** allows cleaning of the window blinds with or without fluid. Further, the blind cleaning device **100** allows removable coupling of different attachments, such as brushes, showers, nozzle, and the like. The blind cleaning device **100** includes fewer parts and can be easily assembled without requiring additional tools. Further, the blind cleaning device **100** is easy and convenient to use for users and does not cause user fatigue.

[0036] In the drawings and specification, there have been disclosed preferred embodiments and examples of the disclosure and, although specific terms are employed, they are used in a generic and descriptive sense only and not for the purpose of limitation of the scope of the disclosure being set forth in the following claims.

LIST OF ELEMENTS

[0037]

100	Blind Cleaning Device
102	Body
103	Fluid Connection
104	Bracket
106	First End
108	Second End
110	First Surface
112	Second Surface
114	Projections
116	First Inlet
118	Inlet Portion

120 Second Inlet
122 Limitation Stop
124 Fluid Supply Device
126 Rotatable Joint
127 Distributor
128 Actuator
129 Inlet Channel
130 Hose Connector
131 Outlet Channel
132 Threaded Section
134 First Bristle Plate
135 Inlet Opening
136 Second Bristle Plate
137 Outlet Opening
138 First Plate Surface
140 Second Plate Surface
142 Connecting Portion
144 Through-Hole
146 Receiving Slots
148 Opening
150 Pair of Bristle Brushes
152 Bristles
154 Shape
155 Bristle Fixation Element
156 Cleaning Room
158 Front Side
A Axis
D Distance
F Fluid Flow

Claims

1. A blind cleaning device **(100)** comprising:

a body **(102)** defining a bracket **(104);**
a pair of bristle plates **(134, 136)** adapted to couple with the bracket **(104)** of the body **(102),** wherein the body **(102)** is adapted to couple with a fluid connection **(103)** which provides a fluid; and
a pair of bristle brushes **(150)** adapted to couple with the pair of the bristle plates **(134, 136),** wherein each of the pair of bristle brushes **(150)** includes a plurality of bristles **(152);**

characterized in that:

the pair of bristle brushes **(150)** are coupled with the pair of the bristle plates **(134, 136)** such that the pair of bristle brushes **(150)** contact each other to define a cleaning room **(156)** with the pair of the bristle plates **(134, 136),** wherein the fluid connection **(103)** supplies the fluid into the cleaning room **(156).**

2. The blind cleaning device **(100)** of claim 1, wherein the body **(102)** is removably coupled with a fluid supply device **(124)** for supply of the fluid.

3. The blind cleaning device **(100)** of claim 2, wherein the blind cleaning device includes a rotatable joint **(126)** between the body **(102)** and the fluid supply device **(124).**

4. The blind cleaning device **(100)** of claim 2 or 3, wherein a hose connector (130) is removably attached to the fluid supply device **(124).**

5. The blind cleaning device **(100)** of claim 1, wherein at least one of the pair of bristle plates **(134, 136)** define one or more openings **(148)** to allow discharge of the fluid therefrom.

6. The blind cleaning device **(100)** of claim 1, wherein the pair of bristle plates **(134, 136)** are substantially parallel and include a spring-loaded mechanism.

7. The blind cleaning device **(100)** of claim 1, wherein the pair of bristle plates **(134, 136)** is height adjustable to change a distance **(D)** between the pair of bristle plates **(134, 136).**

8. The blind cleaning device **(100)** of claim 1, wherein the body **(102)** includes an adjustable limitation stop **(122)** for different lamella width.

9. The blind cleaning device **(100)** of claim 1, wherein the pair of bristle brushes **(150)** are removably coupled with the pair of the bristle plates **(134,136).**

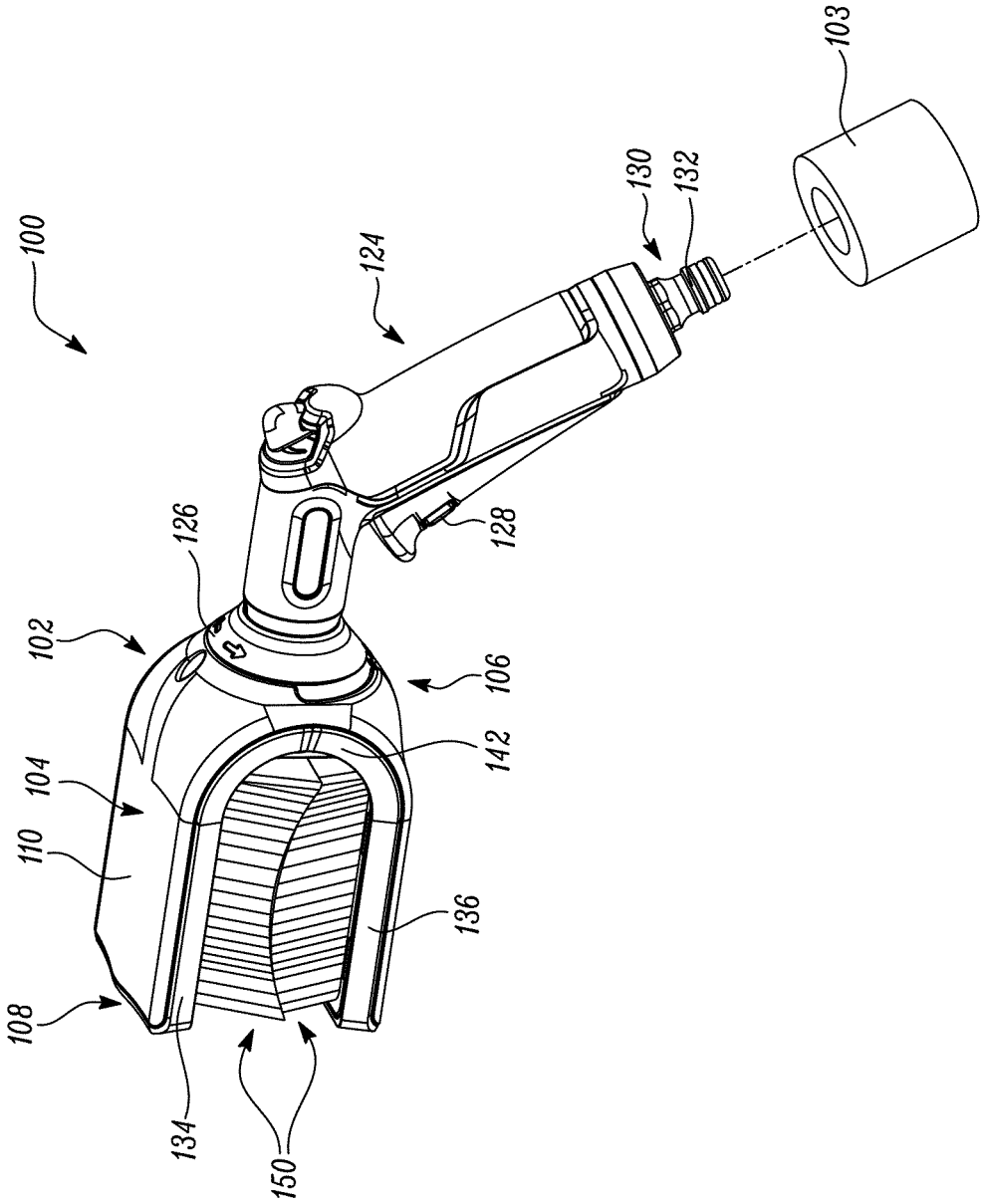

FIG. 1

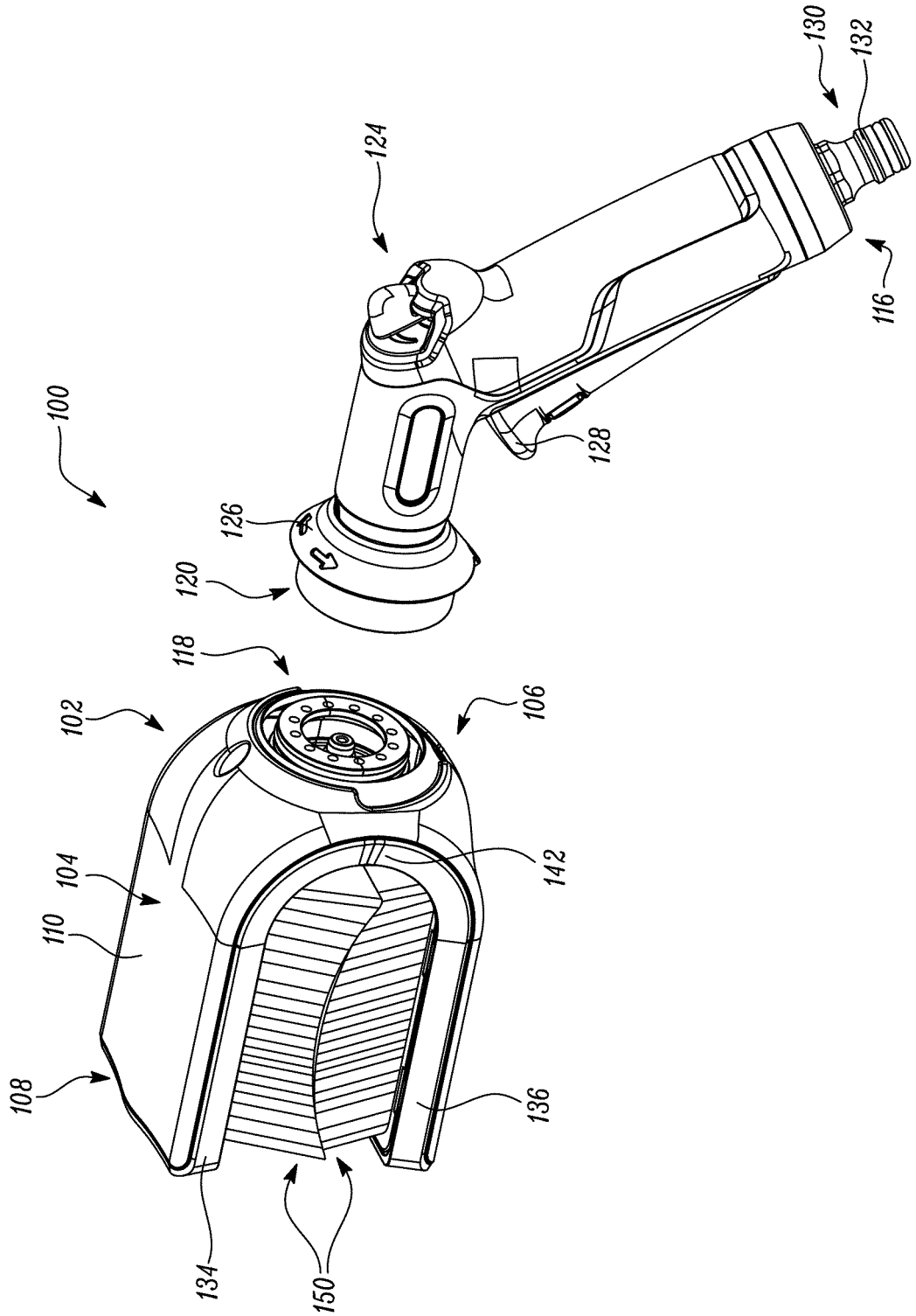
100
102
104
106
108
110
116
118
120
124
126
128
130
132
134
136
142
150

FIG. 2

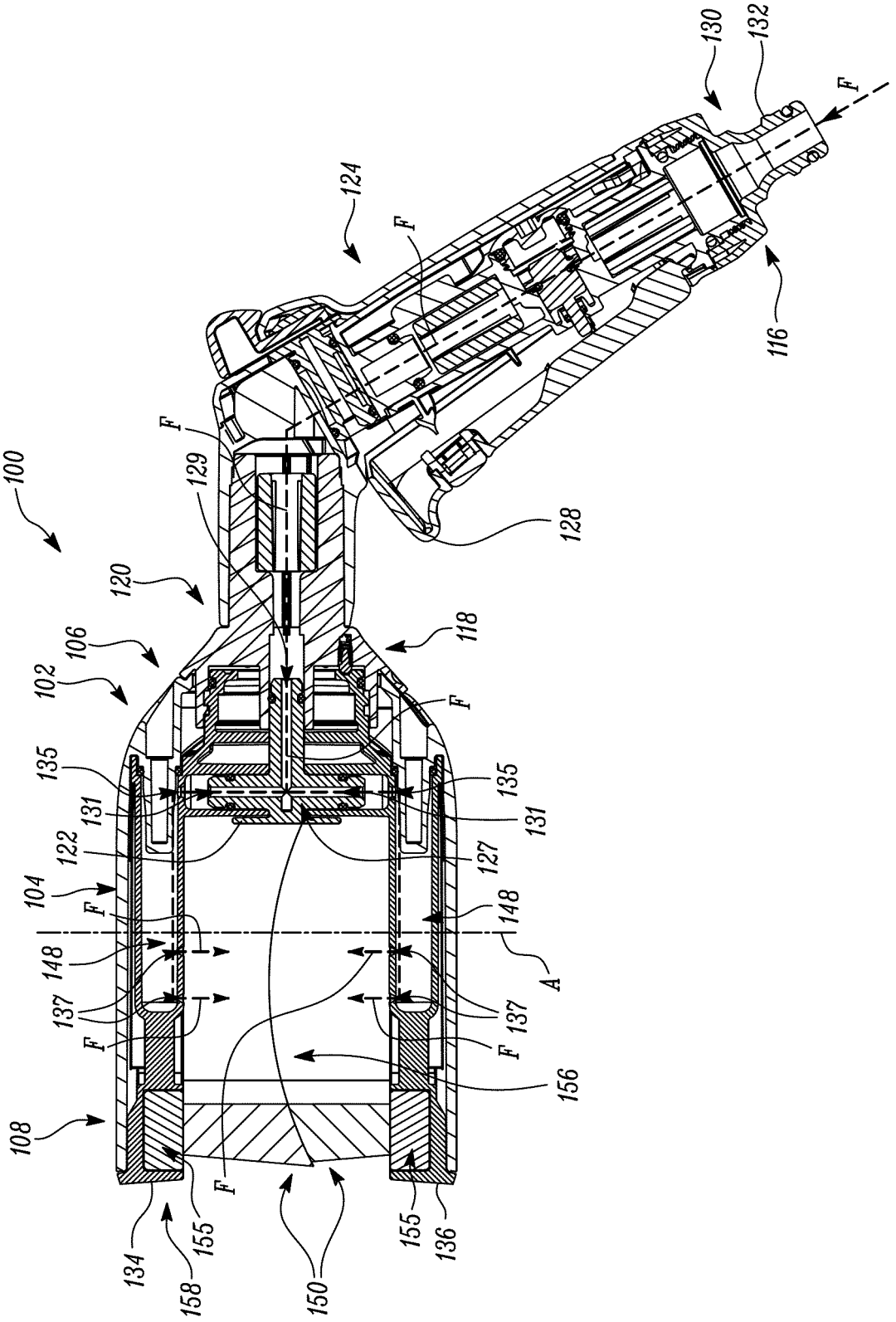
100
102
104
106
108
116
118
120
122
124
127
128
129
130
131
132
134
135
136
137
148
150
155
156
158
A
F

FIG. 3

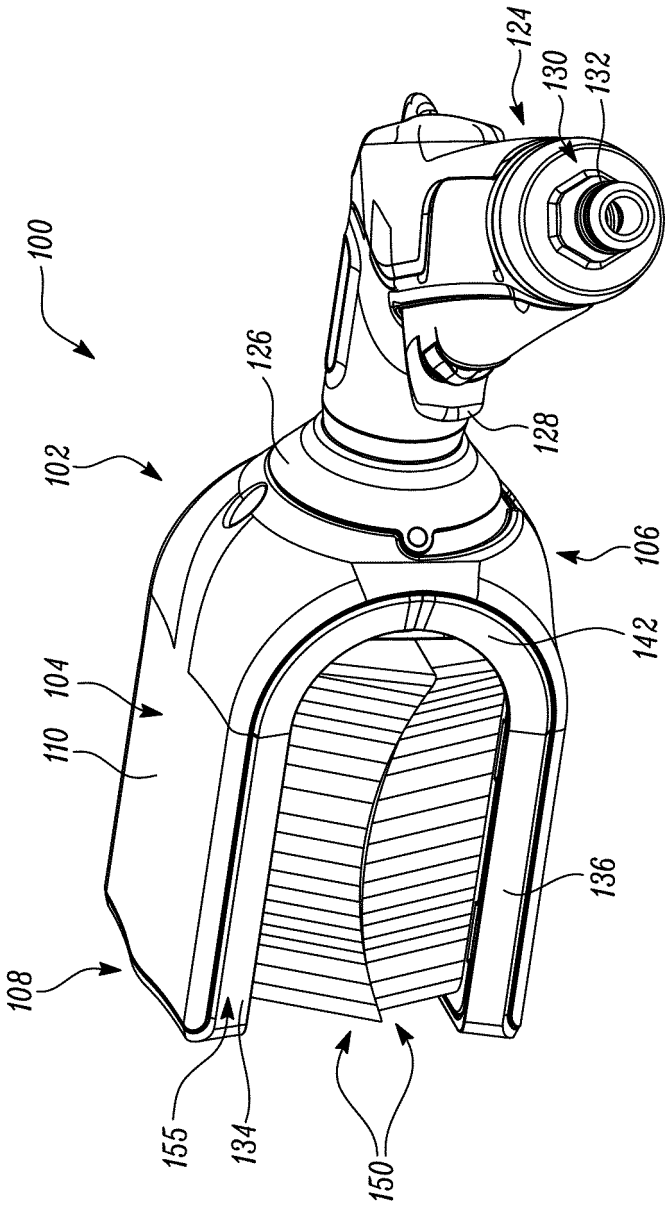

FIG. 4

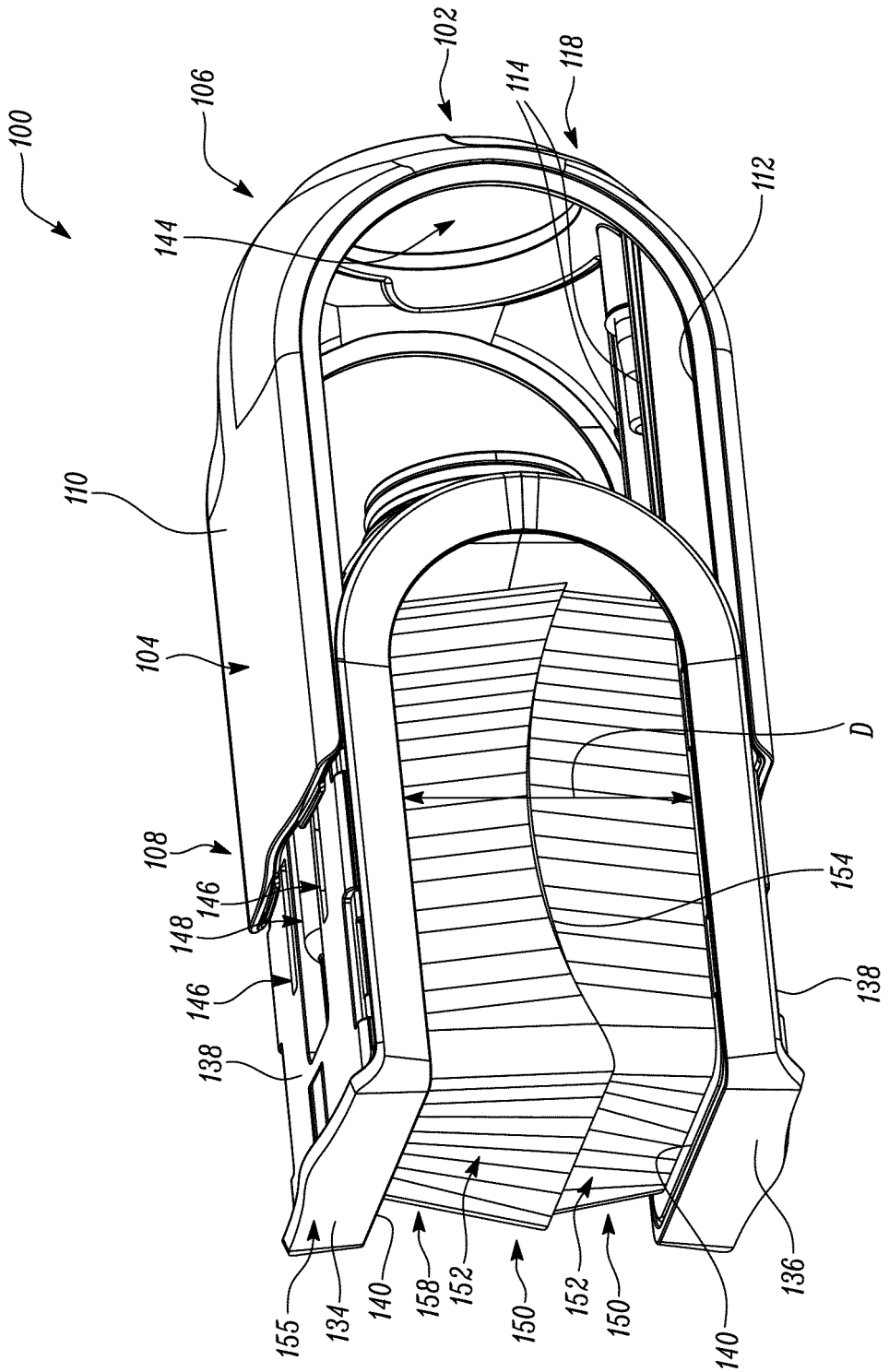
100
102
106
114
118
112
144
110
104
D
108
146
148
154
146
138
138
155
134
140
158
152
150
152
150
140
136

FIG. 5

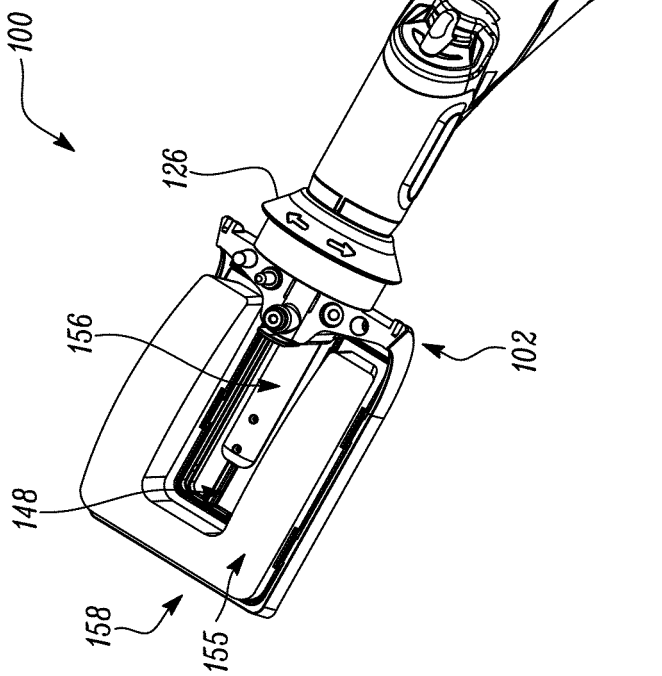
100
126
156
148
158
155
102
124
130
132

FIG. 6A

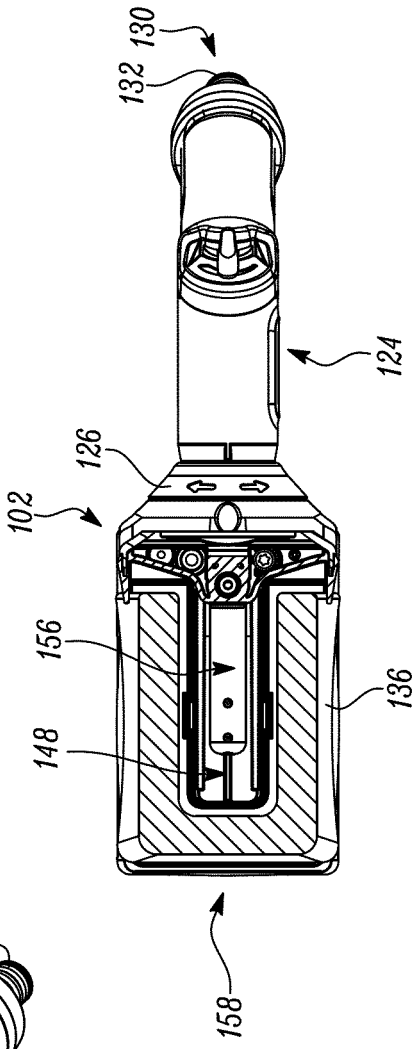
100
102
126
156
148
158
124
130
132
136

FIG. 6B

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 21 18 6663

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	US 2017/127891 A1 (TZVI DERI) 11 May 2017 (2017-05-11) * paragraph [0030] - paragraph [0083]; figures *	1-9	INV. A47L4/02
A	US 2 788 537 A (SEYMOUR GREENBERG) 16 April 1957 (1957-04-16) * column 1, line 49 - column 2, line 48; figures 1-3 *	1-9	
A	US 2 487 444 A (INES JULIAN M) 8 November 1949 (1949-11-08) * column 1, line 51 - column 2, line 34; figures *	1-9	
A	US 2 608 710 A (ZAIDAN JOSEPH P) 2 September 1952 (1952-09-02) * the whole document *	1-9	
A	US 5 400 468 A (DE PETRA ANDY [AU]) 28 March 1995 (1995-03-28) * column 3, line 6 - column 5, line 34; figures *	1-9	TECHNICAL FIELDS SEARCHED (IPC) A47L
A	EP 2 147 625 A1 (JAEGER ANTON [DE]) 27 January 2010 (2010-01-27) * paragraph [0027] - paragraph [0046]; figures 1-3 *	1-9	

4 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 January 2022	Masset, Markus

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 21 18 6663

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-01-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2017127891 A1	11-05-2017	AU 2015278718 A1	16-02-2017
		EP 3160318 A1	03-05-2017
		IL 233380 A	31-08-2015
		US 2017127891 A1	11-05-2017
		WO 2015198310 A1	30-12-2015
US 2788537 A	16-04-1957	NONE	
US 2487444 A	08-11-1949	NONE	
US 2608710 A	02-09-1952	NONE	
US 5400468 A	28-03-1995	AU 656326 B2	02-02-1995
		US 5400468 A	28-03-1995
EP 2147625 A1	27-01-2010	DE 102008034005 A1	28-01-2010
		EP 2147625 A1	27-01-2010
		US 2010014910 A1	21-01-2010

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 20170127891 A **[0005]**