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(54) **CUTTING TOOL**

SCHNEIDWERKZEUG

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a cutting tool. More specifically, the present disclosure relates to the cutting tool which allows ease of blade replacement for common users.

BACKGROUND

[0002] Cutting tools such as secateurs, loppers, rakes, pliers are used for performing cutting action using one or more blades. Put simply, such tools provide increased mechanical assistance and ease of operation to a common user to conveniently perform operations on objects such as branches having varying dimensions. Further, the cutting tools provide benefits such as trapping bypass cutting or simply "bypass" which allows pruning/cutting by the cutting tools while holding an object (i.e. branch) with one of the cutting edges.

[0003] However, there may be many instances where working with the cutting tools may wear the one or more blades. The cutting efficiency of the cutting tool may again be restored by replacing the one or more blades which undergoes wear or becomes blunt. The replacement of the blunt blade of conventional cutting tools may involve a cumbersome process along with a need of additional cost and weights. Such replacement action for the blade may seem highly complex and time consuming, particularly for the common user.

[0004] An example of a cutting tool is provided in US patent application 2016/0,219,793 (hereinafter referred to as '793 reference). The '793 reference provides a cutting tool. The cutting tool includes an enclosure. The cutting tool further includes a first blade and a second blade. The cutting tool further includes a dowel clamping piece. At least one of the first blade and the second blade is replaceable. The dowel clamping piece is taken out to pull at least one of the first blade and the second blade. However, the '793 reference falls short of providing a smooth and safe application with user-friendly replacement of blade(s) of the cutting tool. A further example of prior art is given by the patent documentation WO2018/205126A1

[0005] Thus, there is a need of an improved cutting tool which allows ease of replacement of one or more blades of the cutting tool.

SUMMARY

[0006] In view of the above, it is an objective of the present invention to solve or at least reduce the drawbacks discussed above. The objective is at least partially achieved by a cutting tool. The cutting tool includes a first blade. The cutting tool further includes a second blade. The second blade is pivotally coupled to the first blade. The first blade and the second blade together perform a cutting action on an object placed between them. The cutting tool further includes a drive unit. The drive unit is operatively coupled to at least one of the first blade and the second blade. The drive unit is configured to selectively provide a supplemental motor force to assist a movement of at least one of the first blade and the second blade to perform the cutting action. The cutting tool further includes a rope. The rope is operatively coupled to the drive unit. The rope provides force for a movement of the first blade. The cutting tool is characterized in that an adapter is operatively coupling the first blade with the rope. Thus, the present disclosure provides a simple, convenient and user-friendly replacement of a blade (i. e. the first blade) of the cutting tool.

[0007] According to an embodiment of the present invention, the adapter has an opening to removably fit the first blade with the adapter. The adapter allows on-demand replacement of the first blade through the opening of the adapter.

[0008] According to an embodiment of the present invention, a connection element that may include a removable nut and/or screw is provided outside of a handle of the cutting tool or is provided accessible from outside of a handle of the cutting tool. Thus, it is possible to remove the first blade from the cutting tool without having to disassemble the handle. Additionally or alternatively, the removable connection element that may include a removable nut and/or screw can be provided at the pivoted position of the first blade and the second blade. Additionally or alternatively, the removable connection element, in particular a nut and/or screw, allows ejection of the first blade on disassembly of the removable connection element or is configured to allow ejection of the first blade on disassembly of the removable connection element. So, the removable nut and/or screw provides a convenient arrangement to eject the first blade without any deformations of other parts of the cutting tool.

[0009] According to an embodiment of the present invention, the drive unit includes a motor, a gearbox, a drum, a printed circuit board assembly (PCBA) and a battery to selectively provide the supplemental motor force. This supplemental motor force by the drive unit provides the mechanical advantage to assist cutting action by the blades.

[0010] According to an embodiment of the present invention, the cutting tool includes a slider or trigger to activate or deactivate the drive unit. This allows to have a safe and convenient operation of the cutting tool with the provision of the slider or trigger.

[0011] According to an embodiment of the present invention, the cutting tool includes a top handle and a bottom handle which are operatively coupled with the second blade and the first blade respectively. Thus, the cutting tool can be provided in the form of a garden shears or a secateurs to be operated manually and one-handed.

[0012] According to an embodiment of the present invention, the first blade is releasably coupled to the second blade and/or the the first blade is releasably coupled to

a handle, in particular to the bottom handle and/or wherein the first blade is releasably coupled to the adapter. In such an embodiment, the first blade is enabled to be released from the cutting tool, such that a replacement blade can be coupled to the cutting tool if appropriate.

[0013] According to an embodiment of the present invention, all components of the drive unit are housed in a single handle, in particular in the top handle. Accordingly, it is possible to provide the bottom handle as a very slim handle. Further, mounting of the drive unit may be simplified if arranged in the same handle.

[0014] According to an embodiment of the present invention, the adapter is formed to couple to a loop formed by the rope in particular in that the rope forms a loop around the adapter. Thus, a simple and reliable force transmitting connection between the handle and the blade coupled to the adapter is provided.

[0015] According to an embodiment of the present invention, the adapter has a sleeve-like form or is a sleeve, in particular wherein the first blade passes through two openings formed in a substantially cylindrical wall of the adapter to removably fit the first blade with the adapter. In such a form, the adapter is sufficiently rigid and enables to receive and transfer a force from the rope to the blade coupled to the adapter. Further, the blade can be coupled easily to the adapter.According to an embodiment of the present invention, the adapter comprises a, preferably circumferential, recess in which the rope, in particular the loop formed by the rope, is arranged. In this way, the rope can be attached to a seat formed within the adapter, thereby preventing the rope from slipping off the adapter.

[0016] Additionally or alternatively, the adapter comprises one or two cutout(s), in particular provided in the cylindrical wall of the adapter, in which the rope, in particular the loop formed by the rope, may be arranged such that the rope is prevented from sliding off the adapter. Also these elements allow attachment of the rope to an adapter, wherein the rope may be prevented from slipping off the adapter.

[0017] According to an embodiment of the present invention, the adapter is attached to the bottom handle and to the first blade in such way as to allow, in particular pivotal, movement of the first blade relative to the bottom handle. Thus, a movement of the blade relative to the bottom handle may be detected by a switch, enabling determination of the manual force applied to the handle and thereby enabling determination whether an assisting force to be supplied by the cutting tool shall be added to the manual force or not. This effect is in particular achieved in that, in a mounted state of the first blade, the adapter is attached to the first blade such that the adapter cannot move relative to the first blade, but wherein the adapter is attached to the bottom handle such that it is enabled to move relative to the handle, at least when the first blade moves relative to the bottom handle. It shall be appreciated that it is possible that the adapter is not directly attached to the bottom handle, but only indirectly via the first blade, or that the adapter is only in touch with, but not fixed to the bottom handle.

[0018] According to an embodiment of the present invention, the adapter comprises a hollow space which is configured to receive at least a part of a spring of the cutting tool, at least in a fully compressed state of the spring. Thus, the spring can be accommodated partially within the adapter and the bottom handle, allowing a compact design of the cutting tool.

[0019] According to an embodiment of the present invention, the adapter is provided with a tube element which extends from opening to opening, in particular through which the first blade passes such that the rope is mechanically separated from the shaft when the shaft is moved out of or into the adapter. In such an embodiment, the rope is protected from damage by the blade passing through the adapter and possibly entangling with the rope.

[0020] According to an embodiment of the present invention, the passage formed by the adapter for the first blade is configured to ensure that an end of a shaft of the first blade connects with a connector positioned within the bottom handle, in particular positioned within an end portion of the bottom handle. In the case that a switch or the like may be arranged within an end region of the bottom handle, that shall detect relative movement between the bottom handle and the first blade, it is advantageous when the first blade is guided during passage through the bottom handle towards the switch part for connection with the first blade. Thus, connection of the first blade with the connector of the switch is simplified.

[0021] Other features and aspects of this invention will be apparent from the following description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The invention will be described in more detail with reference to the enclosed drawings, wherein:

FIG. 1 shows a perspective view of a cutting tool, in accordance with an aspect of the present disclosure;

FIG. 2 shows a perspective view of a drive unit within the cutting tool, in accordance with an aspect of the present disclosure;

FIG. 3 shows a perspective view of an adapter of the cutting tool, in accordance with an aspect of the present disclosure;

FIG. 4 shows a perspective view of the cutting tool of **FIG. 1** after disassembly of a removable nut and/or screw, in accordance with an aspect of the present disclosure;

FIG. 5 shows a perspective view of the cutting tool during disassembly of a first blade, in accordance with an aspect of the present disclosure.

FIG. 6 shows a perspective view of a drive unit and an adapter within the cutting tool, in accordance with an aspect of the present disclosure; and

FIG. 7 shows a perspective view of a drive unit and an adapter within the cutting tool in an open position of the cutting tool in accordance with an aspect of the present disclosure;

DESCRIPTION OF EMBODIMENTS

[0023] The present invention will be described more fully hereinafter with reference to the accompanying drawings, in which example embodiments of the invention incorporating one or more aspects of the present invention are shown. This invention 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 invention to those skilled in the art. For example, one or more aspects of the present invention may be utilized in other embodiments and even other types of structures and/or methods. In the drawings, like numbers refer to like elements.

[0024] Certain terminology is used herein for convenience only and is not to be taken as a limitation on the invention. 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.

[0025] **FIG. 1** illustrates a cutting tool **100.** The cutting tool **100** of the present disclosure is illustrated as secateurs, however, the present disclosure may be readily applied to any cutting tool **100** such as, but not limited to, a lopper, shear, scissor etc. with two or more cutting edges. The cutting tool **100** includes one or more blades i.e. a first blade **102** and a second blade **104.** The second blade **104** is pivotally coupled to the first blade **102.** The first blade **102** and the second blade **104** together perform a cutting action on an object (generally branches and the like) placed between them.

[0026] The cutting tool **100** further includes a removable nut and/or screw **106.** The removable nut and/or screw **106** is provided at the pivoted position of the first blade **102** and the second blade **104.** The removable nut and/or screw **106** allows ejection of the first blade **102** (best illustrated through **FIGS. 4,** and **5**) on disassembly of the removable nut and/or screw **106.** The removable nut and/or screw **106** provides a convenient arrangement to eject the first blade **102** without any deformations of other parts of the cutting tool **100.** In some embodiments, the removable nut and/or screw **106** may be any one or more of a coupling nut, a flange nut, a hex nut, a lock nut, a slotted nut, a square nut, a wheel nut and the like.

[0027] Moreover, the cutting tool **100** includes one or more handles i.e. a top handle **108** and a bottom handle **110** which are operatively coupled with the second blade **104** and the first blade **102** respectively. In one embodiment the cutting tool **100** further includes a lid **132.**

[0028] In some embodiments, the one or more blades i.e. the first blade **102** and the second blade **104** may be one or more of a clip point blade, a drop point blade, a gut hook blade, a hawkbell blade, a needle point blade, a straight back blade, a sheepsfoot blade, a spear point blade or any other blade as used or known in the art. Further, the first blade **102** and the second blade **104** may be made of steel or any other material as used or known in the art. Choice of the material for any of the first blade **102** and the second blade **104** will generally depend upon factors such as life, application, weight or other parameters related to the cutting tool **100.** However, the present disclosure is not to be limited by the type of the first blade **102** and the second blade **104** in any manner.

[0029] During implementation, at least one of the first blade **102** and the second blade **104** may be a fixed blade while the other performs desired cutting action. Alternately or additionally, both the first blade **102** and the second blade **104** may be movable during the cutting action.

[0030] **FIG. 2** illustrates the cutting tool **100** which includes a drive unit **130.** The drive unit **130** includes a motor **112** and a gearbox **114.** The drive unit **130** further includes a drum **116** comprising a clutch, a retraction spring and a winch. Further, the drive unit **130** includes a printed circuit board assembly (PCBA) **118** and a battery **120.** In one embodiment the battery **120** is covered by the lid **132,** as will be evident through combined reference to **FIGS. 1, 2.** The lid **132** may be assembled, disassembled to gain access to the battery **120.** The lid **132** may be assembled or disassembled with the top handle **108** using any connection such as, but not limited to, sliding, snap-fits, magnetic coupling, push-fits and the like. The drive unit **130** may be operatively coupled to at least one of the first blade **102** and the second blade **104.** The drive unit **130** is configured to selectively provide a supplemental motor force to assist a movement of at least one of the first blade **102** and the second blade **104** to perform the cutting action.

[0031] As illustrated in **FIG. 2,** the cutting tool **100** could also include a slider or trigger to activate or deactivate the drive unit **130.** In the depicted embodiment this slider or trigger is realized in top of the cutting tool **100** as slider or trigger **122,** alternatively it as well could be realized as a slider or trigger. On engaging, moving or pressing the slider or trigger **122** the drive unit **130** gets switched on and off and thus the cutting tool **100** becomes convenient and safe to handle by common users. The drive

unit **130** may be deactivated for instances which may require to save/extend battery life or allow uninterrupted operation of the power-assisted cutting tool **100,** such as for low battery conditions. In such instances of the deactivated drive unit **130,** it could be possible that the motor **112** will remain in a disengaged/OFF state leading to a purely user-based cutting action by the cutting tool **100,** without any supplemental motor force. In one embodiment the slider or trigger **122** might also look the cutting tool **100** in a closed status.

[0032] In some embodiments, the slider or trigger **122** may be a button, a knob, a single pole single throw switch, a single pole double throw switch, a double pole single throw switch, a double pole double throw switch, a push-button switch, a toggle switch, a limit switch, a float switch, and the like. Alternately or additionally, a button, a knob, or any other switching means as used or known in the relevant art may be present in place of the switch **122.**

[0033] In a preferred embodiment, all components of the drive unit **130** are housed in a single handle i.e. the top handle **108** as best illustrated in **FIG. 2** with the cutting tool being in closed status. This helps in reducing the thickness, dimensions, ergonomic profile or spatial footprint of the bottom handle **110.** This even allows the combined profile of the top handle **108,** and the bottom handle **110** to be looked at as one part, particularly during closed state of the first handle **108,** when at least a part of the second handle **110** at least partially encloses the back portion **111** of the first handle **108.** This advantageous ergonomic profile can be seen with the side view of the cutting tool **100** of **FIG. 2**.By this it also becomes possible to realize the first handle **108** as a slim bottom handle that allows the operation of the cutting tool even with small hands

[0034] **FIG. 3** illustrates details with the bottom handle **110** (shown in the bottom of the drawing) and the top handle **108** (shown on the top of the drawing) of the cutting tool **100** in a closed position. The cutting tool **100** having a spring **124.** The cutting tool **100** further includes a rope **126** transmitting the force from the drive unit **130** inside the top handle **108** into the bottom handle **110** and an adapter **128** inside of the bottom handle **110.** Specifically, the adapter 128 is arranged inside of a cavity formed by the bottom handle 110. The adapter **128** finds application for pre-fixing the spring **124** and the rope **126** with the bottom handle **110,** without any direct engagement or contact of the spring **124** and the rope **126** with the bottom handle **110,** as best illustrated in **FIG. 3.** The first blade 102 comprises a holding section which is insertable into and is, as shown in FIG. 3, arranged inside of a blade seat formed by a cavity provided by the bottom handle 110. Thus, the holding section is firmly attached to the bottom handle 110 in order not provide any backlash between first blade 102 and bottom handle 110. The first blade **102** is passing through the adapter **128.** The piercing of the first blade **102** through the adapter **128** helps in securing or locking of the first blade **102** within the adapter **128,** and/or the bottom handle **110** as per the requirement. The holding section of the first blade 102 may have a substantially flat cross section with a height relatively large compared to a width of the cross section. Thus, the holding section can be arranged inside the cavity and pass through the adapter such that the direction of the force transferred by the rope 126 is effective substantially parallel to the extension of the height of the cross section of the holding section. In other words, the force transferred by the rope 126 via the adapter 128 to the first blade 102 acts substantially perpendicular relative to a longitudinal extension of the holding section of the first blade 102.

[0035] During implementation, a connection of the adapter **128** with the first blade **102** may be achieved by pushing, sliding, and piercing the first blade **102** through the adapter **128.** The adapter **128** may be made up of one or more of a material like plastic, rubber, glass and the like. Additionally, or alternatively, the first blade **102** may slide, pierce, pass into the adapter **128.** The adapter **128** allows the smooth movement or disassembly of the first blade **102** by simple pulling action on the first blade **102,** after removal of the removal nut and/or screw **106** as illustrated in **FIG. 4**.The removable nut and/or screw **106** may be disassembled by use of hand tools or by any other way convenient for the common user. On taking off the removable nut and/or screw **106,** the first blade **102** may be disassembled from the cutting tool **100,** as illustrated in **FIG. 5.** Then, the disassembled first blade **102** allows its substitution with another blade which may be another first blade **102** (not shown), which may have a sharp cutting edge or any other desired feature. The substituted blade i.e. the another first blade **102,** for the replaced first blade **102,** may have different design, profile etc. with same basic features, or structure which may allow it to desirably engage with the adapter **128.**

[0036] **FIG. 5** illustrates the disassembling of the first blade **102** from the cutting tool **100.** The first blade **102** may be removed or discarded by pushing, sliding the first blade **102** manually or by providing a button (not shown) which on pressing takes the first blade **102** out. The first blade 102 can be moved into the cavity or removed therefrom by a movement substantially parallel or slightly slanted relative to a longitudinal axis of the bottom handle 110. The adapter 128 is arranged inside of the cavity of the bottom handle 110 in such way that the holding section of the first blade 102 can pass through the adapter 128 by the same movement. The adapter 128 may have a ring shaped form with a circumferential recess, wherein a section, e.g. an end section, of the rope 126 can be accommodated. The end section of the rope 126 may be slung around the adapter 128 and may be fixed to another section of the rope 126 by a knot or a clamp, thus, forming a loop or a turn for transmitting the force from the rope 126 to the adapter 128. In some embodiments, an indicator (not shown) may be provided to confirm the configuration of the substituted blade (i.e. the another first blade **102**), for the first blade 102. The indicator may in-

dicate either that the first blade **102** is in a working state or not. The indications may be given by different ways like buzzing, flashing a light, change of color and any such techniques as known or used in the art.

[0037] In FIG. 6, the cutting tool 100 as shown in FIG. 2 including additional details is illustrated. The adapter 128 is provided as a sleeve which is arranged within the bottom handle 110. The bottom handle 110 has an opening having a corresponding form to accommodated the sleeve. Further, the sleeve comprises a circumferential recess in which the rope 126 is embedded and guided around the shaft of the first blade 102. Additionally, the sleeve may have one or two cutouts 134 such that the circumference in a height direction of the sleeve is reduced in the region of the cutout(s) 134. This allows to tighten a loop formed by the rope 126 around the sleeve, such that the loop is positioned in the circumferential recess and in the cutout(s) 134 such that the loop cannot slip from the sleeve. The sleeve further may have an inner diameter dimensioned such that the spring 124 can enter an inner hollow space of the sleeve when the cutting tool 100 is in a closed position and when the spring 124 is in a fully compressed state.

[0038] The sleeve further may have two openings on its cylindrical wall through which the shaft of the first blade 102 passes. By winding the rope 126 around the sleeve 128, the shaft of the first blade 102 can be extracted from the sleeve or slid or pushed into the sleeve without getting entangled with the rope 126. Additionally or alternatively, it is possible to provide a tube element or the like which extends from opening to opening and through which the shaft passes such that the rope 126 is mechanically separated from the shaft when the shaft is moved our or into the sleeve.

[0039] Fig. 7 illustrates a connector 136 that may be connected to the end of the shaft of the first blade 102. The connector 136 may form a counterpart of a switch element 138 being fixedly attached to the bottom handle 110. In the case that the bottom handle 110 is manually operated by a user and the resistance of the subject to be cut is high enough that the manual force applied by the user exceeds a certain amount, then the bottom handle 110 may move relative to the shaft of the first blade 102 such that the switch 138 operably couples to or cooperates with the connector causing a signal to be send via a cable 140 to a control of the cutting tool in order to start supply of the motor force assisting to the manual cutting process.

[0040] According to Fig. 7 the default state of switch 138 and connector 136 are shown. This means that, if no manual force is applied to the top and bottom handles 108, 110, switch 138 and connector 136 are operably decoupled such that no signal or only a default signal is transmitted via the cable 140. In this position, the connector 136 is arranged in such way that the end of the shaft of the first blade 102 can connect with the connector 136 when being inserted into the bottom handle 110. For this purpose connector 136 and the end of the shaft may comprise corresponding forms for establishing a plug-in connection.

[0041] In the drawings and specification, there have been disclosed preferred embodiments and examples of the invention 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 invention being set forth in the following claims.

LIST OF ELEMENTS

[0042]

100	Cutting Tool
102	First Blade
104	Second Blade
106	Removable Nut and/or Screw
108	Top Handle
110	Bottom Handle
112	Motor
114	Gear Box
116	Drum
118	Printed Circuit Board Assembly (PCBA)
120	Battery
122	Slider or Trigger
124	Spring
126	Rope
128	Adapter
130	Drive Unit
132	Lid
134	Cutout
136	Connector
138	Switch
140	Cable

Claims

1. A cutting tool (**100**) comprising:

a first blade (**102**);
a second blade (**104**) pivotally coupled to the first blade (**102**), wherein the first blade (**102**) and the second blade (**104**) together perform a cutting action on an object placed therebetween;
a top handle (**108**) and a bottom handle (**110**) which are operatively coupled with the second blade (**104**) and the first blade (**102**) respectively;
a drive unit (**130**) operatively coupled to at least one of the first blade (**102**) and the second blade (**104**), wherein the drive unit (**130**) is configured to selectively provide a supplemental motor force to assist a movement of at least one of the first blade (**102**) and the second blade (**104**) to perform the cutting action; and
a rope (**126**) operatively coupled to the drive unit (**130**), wherein the rope (**126**) provides force for

a movement of the first blade (**102**);
an adapter (**128**) operatively coupling the first blade (**102**) with the rope (**126**);
wherein the first blade (102) is releasably coupled to the second blade (104) and wherein the first blade (102) is releasably coupled to a handle and wherein the first blade (102) is releasably coupled to the adapter (128).

2. The cutting tool (**100**) of claim 1, wherein the adapter (**128**) has an opening to removably fit the first blade (**102**) with the adapter (**128**).

3. The cutting tool (**100**) of any of the preceding claims, wherein a removable connection element, in particular a removable nut and/or screw (**106**), is provided outside of a handle (108, 100) of the cutting tool (100) or is provided accessible from outside of a handle (108, 100) of the cutting tool (100)
and/or

wherein the removable connection element, in particular a removable nut and/or screw (**106**), **is** provided at the pivoted position of the first blade (**102**) and the second blade (**104**),
wherein the removable connection element allows ejection of the first blade (**102**) on disassembly of the removable connection element.

4. The cutting tool (**100**) of any of the preceding claims, wherein the drive unit (**130**) comprising a motor (**112**), a gearbox (**114**), a drum (**116**), a printed circuit board assembly (PCBA) (**118**) and a battery (**120**) to selectively provide the supplemental motor force.

5. The cutting tool (**100**) of any of the preceding claims, wherein the cutting tool (**100**) comprises a slider or trigger (**122**) to activate or deactivate the drive unit (**130**).

6. The cutting tool (100) of any of the preceding claims, wherein the first blade (102) is releasably coupled to the bottom handle (110).

7. The cutting tool (100) of claim 4, wherein all components of the drive unit (130) are housed in a single handle, in particular in the top handle (108).

8. The cutting tool (100) of any of the preceding claims, wherein the adapter (128) is formed to couple to a loop formed by the rope (126), in particular in that the rope (126) forms a loop around the adapter (128).

9. The cutting tool (100) of any of the preceding claims, wherein the adapter (128) has a sleeve-like form or is a sleeve, in particular wherein the first blade (102) passes through two openings formed in a substantially cylindrical wall of the adapter (128) to removably fit the first blade (102) with the adapter (128).

10. The cutting tool (100) of any of the preceding claims, wherein the adapter (128) comprises a, preferably circumferential, recess in which the rope (126), in particular the loop formed by the rope (126), is arranged
and/or
wherein the adapter (128) comprises one or two cut-out(s) (134), in particular provided in the cylindrical wall of the adapter (128), in which the rope (126), in particular the loop formed by the rope (126), may be arranged such that the rope (126) is prevented from sliding off the adapter (126).

11. The cutting tool (100) of any of the preceding claims, wherein the adapter (128) is attached to the bottom handle (110) and to the first blade (102) in such way as to allow, in particular pivotal, movement of the first blade (102) relative to the bottom handle (110).

12. The cutting tool (100) of any of the preceding claims, wherein the adapter (128) comprises a hollow space which is configured to receive at least a part of a spring (124) of the cutting tool, at least in a fully compressed state of the spring (124).

13. The cutting tool (100) of any of the preceding claims, wherein the adapter (128) is provided with a tube element which extends from opening to opening, in particular through which the first blade (102) passes such that the rope (126) is mechanically separated from the shaft when the shaft is moved out of or into the adapter (128).

14. The cutting tool (100) of any of the preceding claims, wherein the passage formed by the adapter (128) for the first blade (102) is configured to ensure that an end of a shaft of the first blade (102) connects with a connector (136) positioned within the bottom handle (110), in particular positioned within an end portion of the bottom handle (110).

Patentansprüche

1. Schneidwerkzeug (**100**), umfassend:

eine erste Klinge (**102**);
eine zweite Klinge (**104**), die an die erste Klinge (**102**) schwenkbar gekoppelt ist, wobei die erste Klinge (**102**) und die zweite Klinge (**104**) zusammen eine Schneideaktion an einem dazwischen platzierten Objekt durchführen;
einen oberen Griff (**108**) und einen unteren Griff (**110**), die mit der zweiten Klinge (**104**) beziehungsweise der ersten Klinge (**102**) wirkgekoppelt sind;

eine Antriebseinheit (**130**), die an mindestens eine der ersten Klinge (**102**) und der zweiten Klinge (**104**) wirkgekoppelt ist, wobei die Antriebseinheit (**130**) konfiguriert ist, um eine zusätzliche Motorkraft wahlweise bereitzustellen, um eine Bewegung von mindestens einer der ersten Klinge (**102**) und der zweiten Klinge (**104**) zu unterstützen, um die Schneideaktion durchzuführen; und

ein Seil (**126**), das an die Antriebseinheit (**130**) wirkgekoppelt ist, wobei das Seil (**126**) eine Kraft für eine Bewegung der ersten Klinge (**102**) bereitstellt;

einen Adapter (**128**), der die erste Klinge (**102**) mit dem Seil (**126**) wirkkoppelt;

wobei die erste Klinge (102) an die zweite Klinge (104) lösbar gekoppelt ist und wobei die erste Klinge (102) an einen Griff lösbar gekoppelt ist und wobei die erste Klinge (102) an den Adapter (128) lösbar gekoppelt ist.

2. Schneidwerkzeug (**100**) nach Anspruch 1, wobei der Adapter (**128**) eine Öffnung aufweist, um die erste Klinge (**102**) mit dem Adapter (**128**) ausbaubar einzupassen.

3. Schneidwerkzeug (**100**) nach einem der vorstehenden Ansprüche, wobei ein ausbaubares Verbindungselement, insbesondere eine ausbaubare Mutter und/oder Schraube (**106**), außerhalb eines Griffs (108, 100) des Schneidwerkzeugs (100) bereitgestellt ist oder von außerhalb eines Griffs (108, 100) des Schneidwerkzeugs (100) zugänglich bereitgestellt ist
und/oder

wobei das ausbaubare Verbindungselement, insbesondere eine ausbaubare Mutter und/oder Schraube (**106)**, an der geschwenkten Position der ersten Klinge (**102**) und der zweiten Klinge (**104**) bereitgestellt **ist,**
wobei das ausbaubare Verbindungselement ein Entfernen der ersten Klinge (**102**) bei einer Demontage des ausbaubaren Verbindungselements ermöglicht.

4. Schneidwerkzeug (**100**) nach einem der vorstehenden Ansprüche, wobei die Antriebseinheit (**130**) einen Motor (**112**), ein Getriebe (**114**), eine Trommel (**116**), eine bestückte Leiterplatte (PCBA) (**118**) und eine Batterie (**120**) umfasst, um die zusätzliche Motorkraft wahlweise bereitzustellen.

5. Schneidwerkzeug (**100**) nach einem der vorstehenden Ansprüche, wobei das Schneidwerkzeug (**100**) einen Schieber oder einen Auslöser (**122**), um die Antriebseinheit (**130**) zu aktivieren oder deaktivieren, umfasst.

6. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei die erste Klinge (102) an den unteren Griff (110) lösbar gekoppelt ist.

7. Schneidwerkzeug (100) nach Anspruch 4, wobei alle Komponenten der Antriebseinheit (130) in einem einzigen Griff, insbesondere in dem oberen Griff (108), untergebracht sind.

8. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei der Adapter (128) ausgebildet ist, um an eine durch das Seil (126) ausgebildete Schleife zu koppeln, insbesondere insofern, dass das Seil (126) eine Schleife um den Adapter (128) herum ausbildet.

9. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei der Adapter (128) eine hülsenartige Form aufweist oder eine Hülse ist, insbesondere wobei die erste Klinge (102) durch zwei Öffnungen verläuft, die in einer im Wesentlichen zylindrischen Wand des Adapters (128) ausgebildet sind, um die erste Klinge (102) mit dem Adapter (128) ausbaubar einzupassen.

10. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei der Adapter (128) eine vorzugsweise umlaufende Aussparung, in der das Seil (126), insbesondere die durch das Seil (126) ausgebildete Schleife, angeordnet ist, umfasst und/oder wobei der Adapter (128) einen oder zwei Ausschnitte (134) umfasst, die insbesondere in der zylindrischen Wand des Adapters (128) bereitgestellt sind, in denen das Seil (126), insbesondere die durch das Seil (126) ausgebildete Schleife, derart angeordnet sein kann, dass das Seil (126) daran gehindert wird, von dem Adapter (126) abzugleiten.

11. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei der Adapter (128) an dem unteren Griff (110) und an der ersten Klinge (102) derart befestigt ist, dass die, insbesondere schwenkende, Bewegung der ersten Klinge (102) relativ zu dem unteren Griff (110) ermöglicht wird.

12. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei der Adapter (128) einen Hohlraum umfasst, der konfiguriert ist, um mindestens einen Teil einer Feder (124) des Schneidwerkzeugs mindestens in einem vollständig komprimierten Zustand der Feder (124) aufzunehmen.

13. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei der Adapter (128) mit einem Rohrelement versehen ist, das sich von Öffnung zu Öffnung erstreckt, durch die insbesondere die erste Klinge (102) derart verläuft, dass das Seil (126) von dem Schaft mechanisch getrennt wird, wenn der

Schaft aus dem Adapter (128) oder in diesen bewegt wird.

14. Schneidwerkzeug (100) nach einem der vorstehenden Ansprüche, wobei der durch den Adapter (128) für die erste Klinge (102) ausgebildete Durchgang konfiguriert ist, um sicherzustellen, dass ein Ende eines Schafts der ersten Klinge (102) mit einem Verbinder (136) verbunden ist, der innerhalb des unteren Griffs (110) positioniert ist, insbesondere innerhalb eines Endabschnitts des unteren Griffs (110) positioniert ist.

Revendications

1. Outil de coupe (**100**) comprenant :

une première lame (**102**) ;
une seconde lame (**104**) accouplée de manière pivotante à la première lame (**102**), dans lequel la première lame (**102**) et la seconde lame (**104**) réalisent ensemble une action de coupe sur un objet placé entre elles ;
une poignée supérieure (**108**) et une poignée inférieure (**110**) qui sont accouplées de manière fonctionnelle à la seconde lame (**104**) et à la première lame (**102**) respectivement ;
une unité d'entraînement (**130**) accouplée de manière fonctionnelle à au moins l'une parmi la première lame (**102**) et la seconde lame (**104**), dans lequel l'unité d'entraînement (**130**) est conçue pour fournir sélectivement une force de moteur supplémentaire pour aider un mouvement d'au moins l'une parmi la première lame (**102**) et la seconde lame (**104**) pour réaliser l'action de coupe ; et
une corde (**126**) accouplée de manière fonctionnelle à l'unité d'entraînement (**130**), dans lequel la corde (**126**) fournit une force pour un mouvement de la première lame (**102**) ;
un adaptateur (**128**) accouplant de manière fonctionnelle la première lame (**102**) avec la corde (**126**) ;
dans lequel la première lame (102) est accouplée de manière libérable à la seconde lame (104) et dans lequel la première lame (102) est accouplée de manière libérable à une poignée et dans lequel la première lame (102) est accouplée de manière libérable à l'adaptateur (128).

2. Outil de coupe (**100**) selon la revendication 1, dans lequel l'adaptateur (**128**) a une ouverture pour ajuster de manière amovible la première lame (**102**) avec l'adaptateur (**128**).

3. Outil de coupe (**100**) selon l'une quelconque des revendications précédentes, dans lequel un élément de liaison amovible, en particulier un écrou et/ou une vis amovible (**106**), est prévu à l'extérieur d'une poignée (108, 100) de l'outil de coupe (100) ou est prévu accessible depuis l'extérieur d'une poignée (108, 100) de l'outil de coupe (100)
et/ou

dans lequel l'élément de liaison amovible, en particulier un écrou et/ou une vis amovible (**106**), est prévu au niveau de la position pivotée de la première lame (**102**) et de la seconde lame (**104**),
dans lequel l'élément de liaison amovible permet l'éjection de la première lame (**102**) au démontage de l'élément de liaison amovible.

4. Outil de coupe (**100**) selon l'une quelconque des revendications précédentes, dans lequel l'unité d'entraînement (**130**) comprenant un moteur (**112**), une boîte de vitesses (**114**), un tambour (**116**), un ensemble carte de circuit imprimé (PCBA) (**118**) et une batterie (**120**) pour fournir de manière sélective la force de moteur supplémentaire.

5. Outil de coupe (**100**) selon l'une quelconque des revendications précédentes, dans lequel l'outil de coupe (**100**) comprend un curseur ou un déclencheur (**122**) pour activer ou désactiver l'unité d'entraînement (**130**).

6. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel la première lame (102) est accouplée de manière libérable à la poignée inférieure (110).

7. Outil de coupe (100) selon la revendication 4, dans lequel tous les composants de l'unité d'entraînement (130) sont logés dans une poignée unique, en particulier dans la poignée supérieure (108).

8. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel l'adaptateur (128) est formé pour s'accoupler à une boucle formée par la corde (126), en particulier en ce que la corde (126) forme une boucle autour de l'adaptateur (128).

9. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel l'adaptateur (128) a une forme similaire à un manchon ou est un manchon, en particulier dans lequel la première lame (102) passe à travers deux ouvertures formées dans une paroi essentiellement cylindrique de l'adaptateur (128) pour ajuster de manière amovible la première lame (102) avec l'adaptateur (128).

10. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel l'adaptateur

(128) comprend un évidement, de préférence circonférentiel, dans lequel la corde (126), en particulier la boucle formée par la corde (126), est agencée et/ou dans lequel l'adaptateur (128) comprend une ou deux découpes (134), en particulier prévues dans la paroi cylindrique de l'adaptateur (128), dans lequel la corde (126), en particulier la boucle formée par la corde (126), peut être agencée de telle sorte que la corde (126) est empêchée de glisser de l'adaptateur (126).

11. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel l'adaptateur (128) est fixé à la poignée inférieure (110) et à la première lame (102) de manière à permettre un mouvement, en particulier pivotant, de la première lame (102) par rapport à la poignée inférieure (110).

12. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel l'adaptateur (128) comprend un espace creux qui est conçu pour recevoir au moins une partie d'un ressort (124) de l'outil de coupe, au moins dans un état complètement comprimé du ressort (124).

13. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel l'adaptateur (128) est pourvu d'un élément de tube qui s'étend de l'ouverture à l'ouverture, en particulier à travers lequel la première lame (102) passe de telle sorte que la corde (126) est séparée de manière mécanique de l'arbre lorsque l'arbre est déplacé hors de l'adaptateur (128) ou dans celui-ci.

14. Outil de coupe (100) selon l'une quelconque des revendications précédentes, dans lequel le passage formé par l'adaptateur (128) pour la première lame (102) est conçu pour assurer qu'une extrémité d'un arbre de la première lame (102) se lie à un dispositif de liaison (136) positionné à l'intérieur de la poignée inférieure (110), en particulier positionné à l'intérieur d'une partie d'extrémité de la poignée inférieure (110).

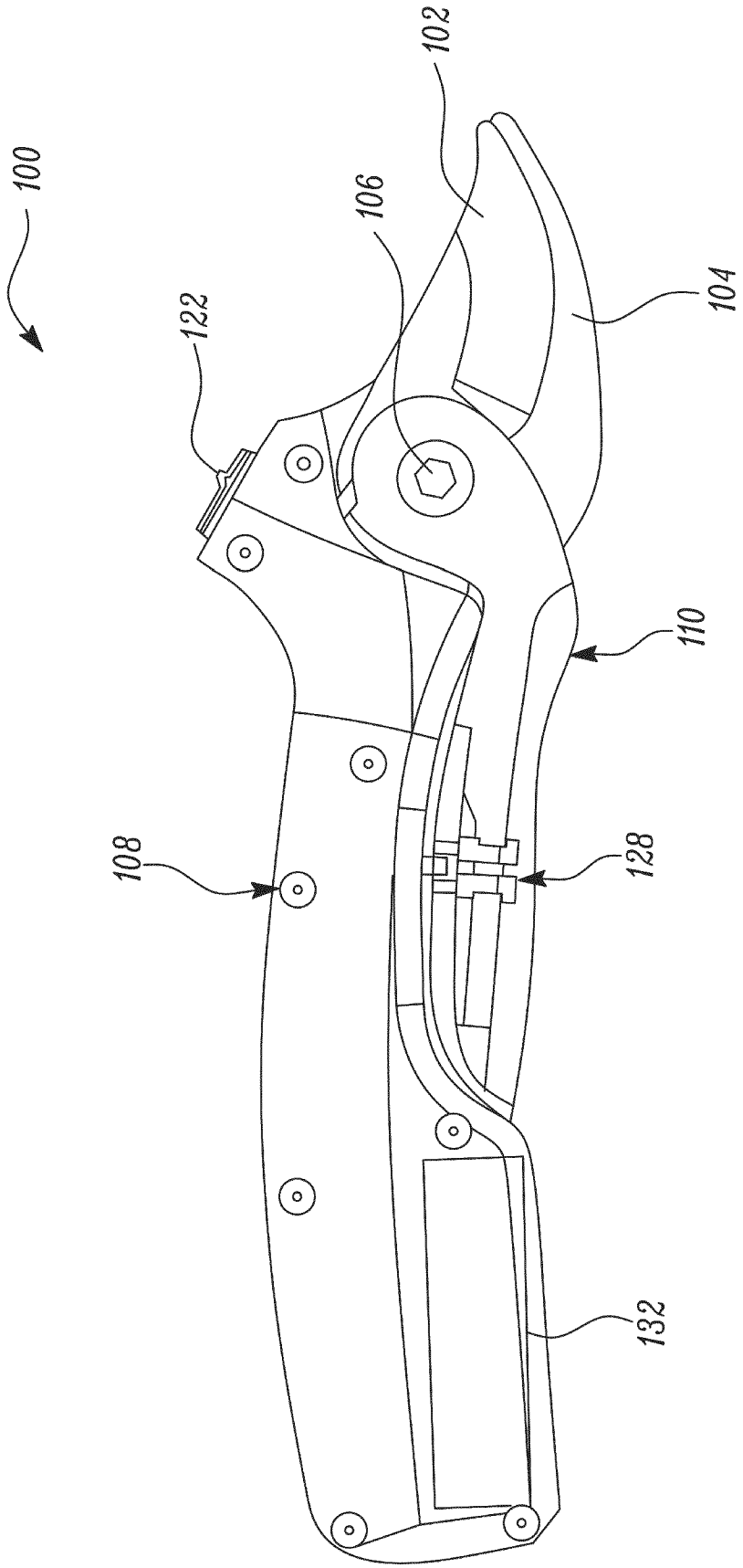

FIG. 1

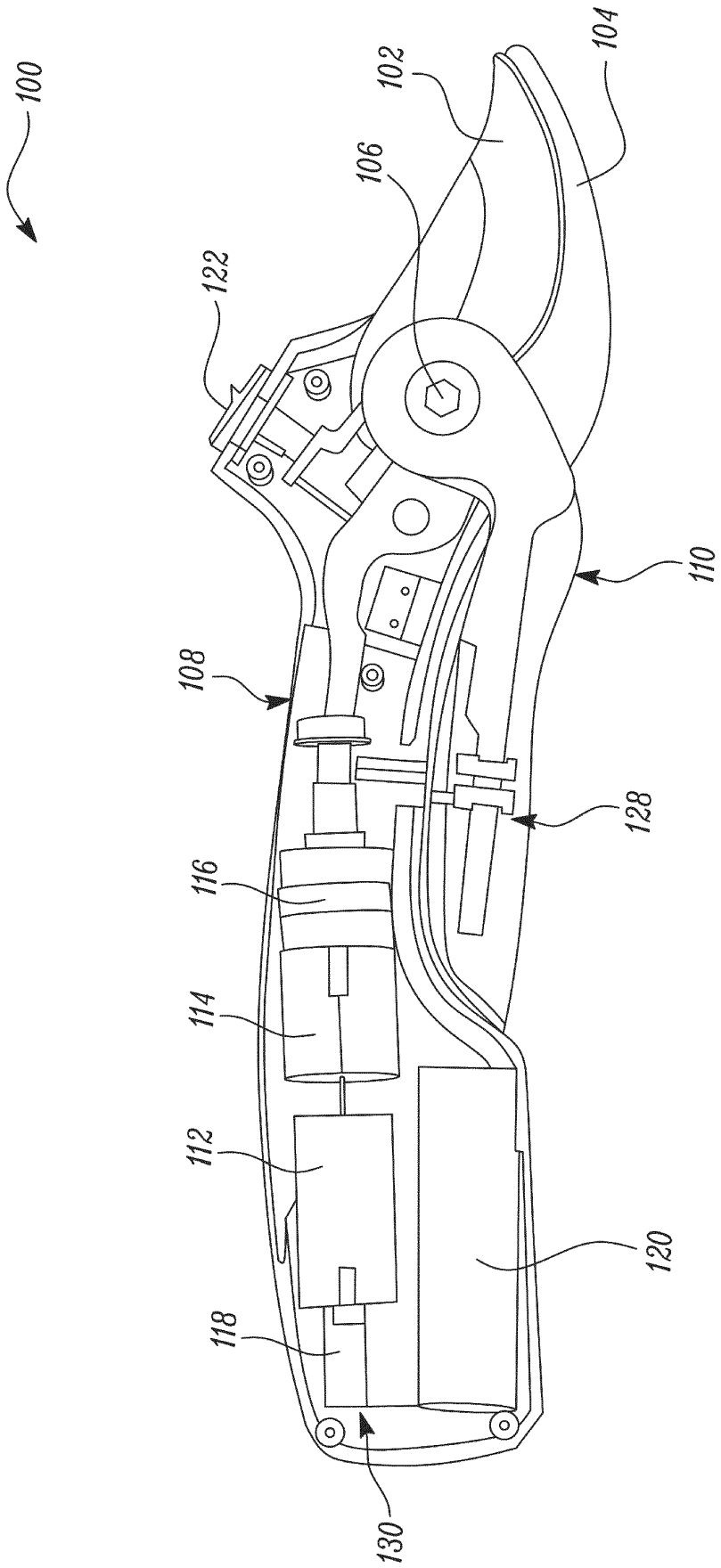

FIG. 2

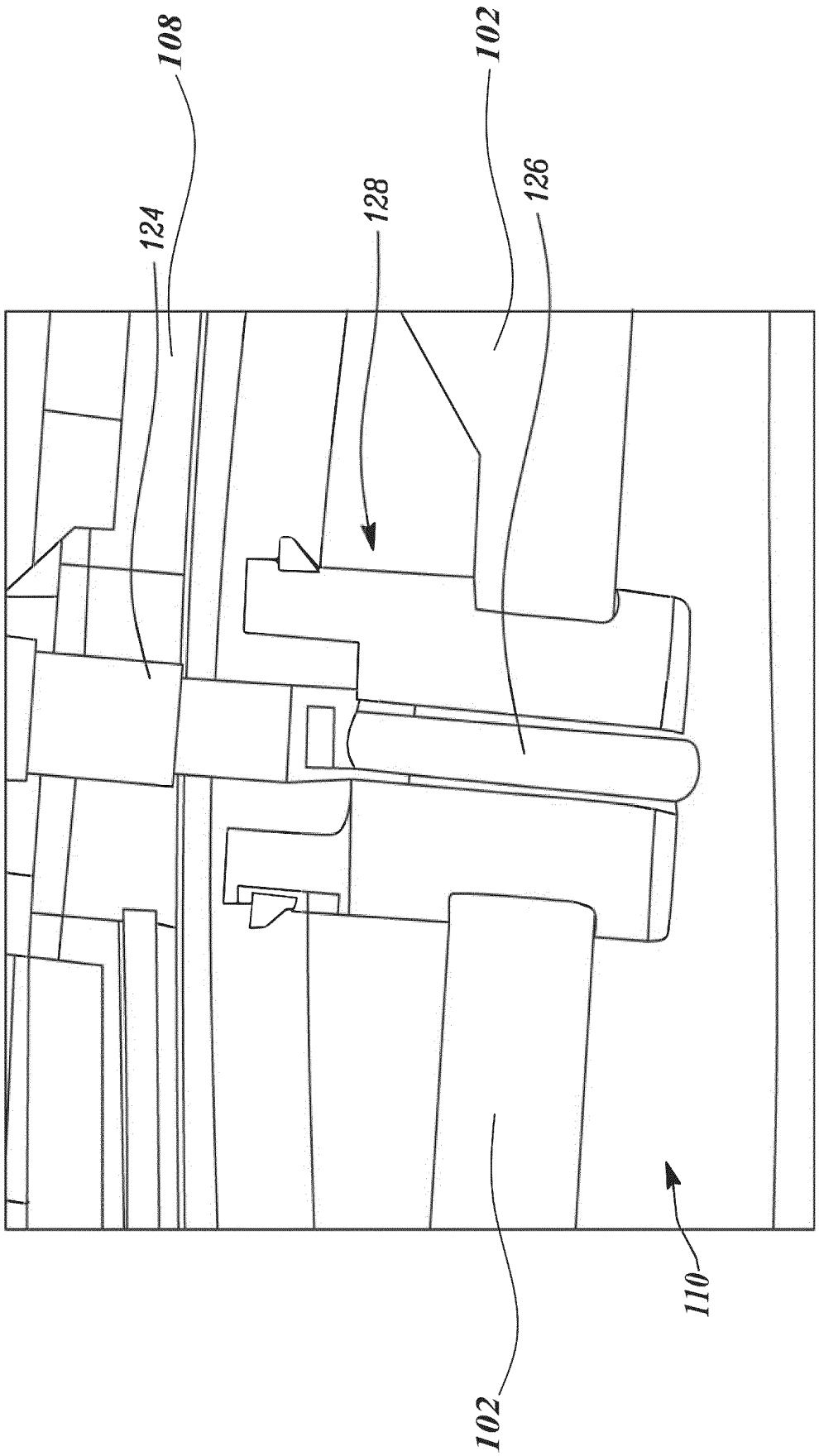

FIG. 3

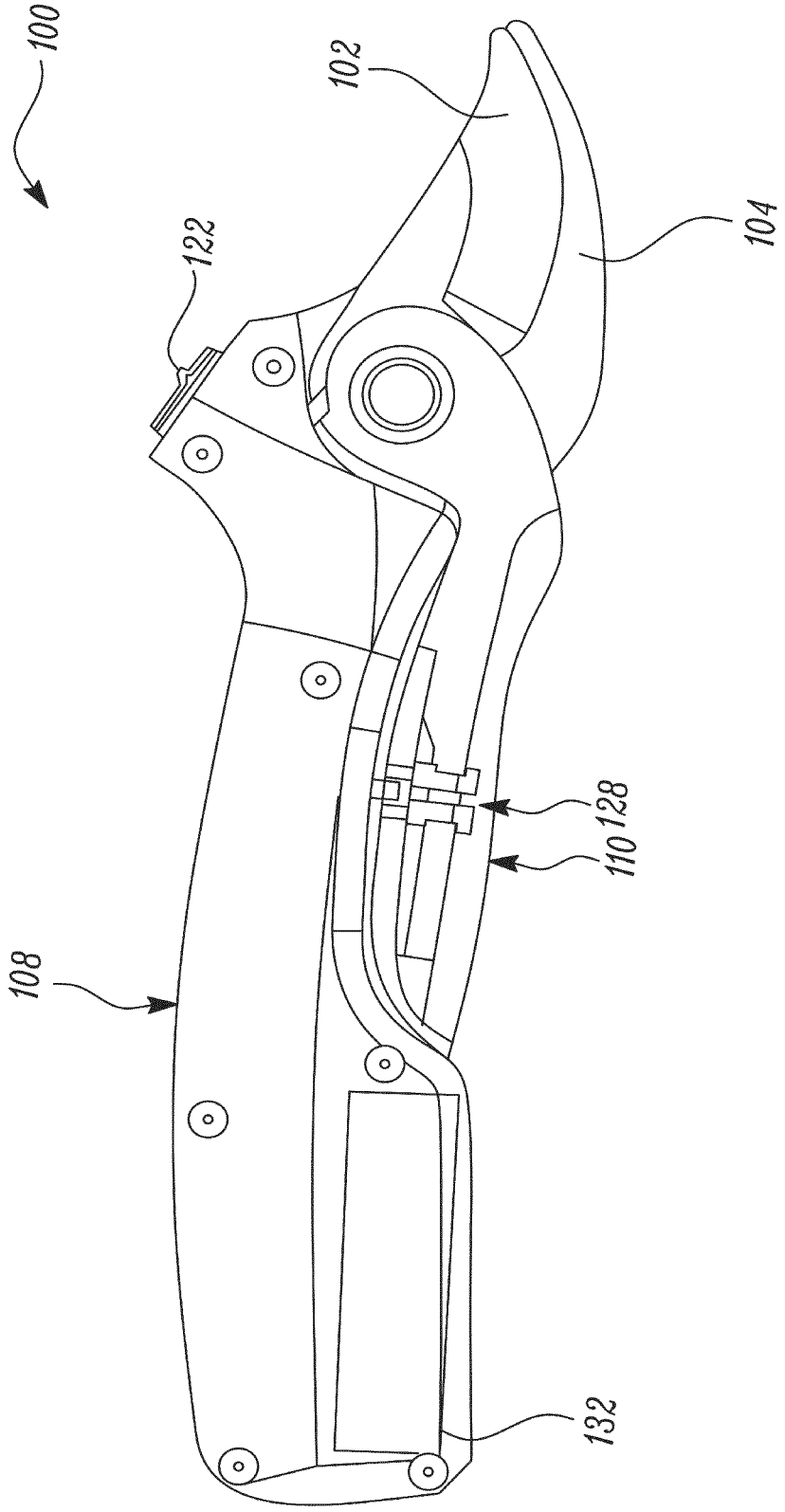

FIG. 4

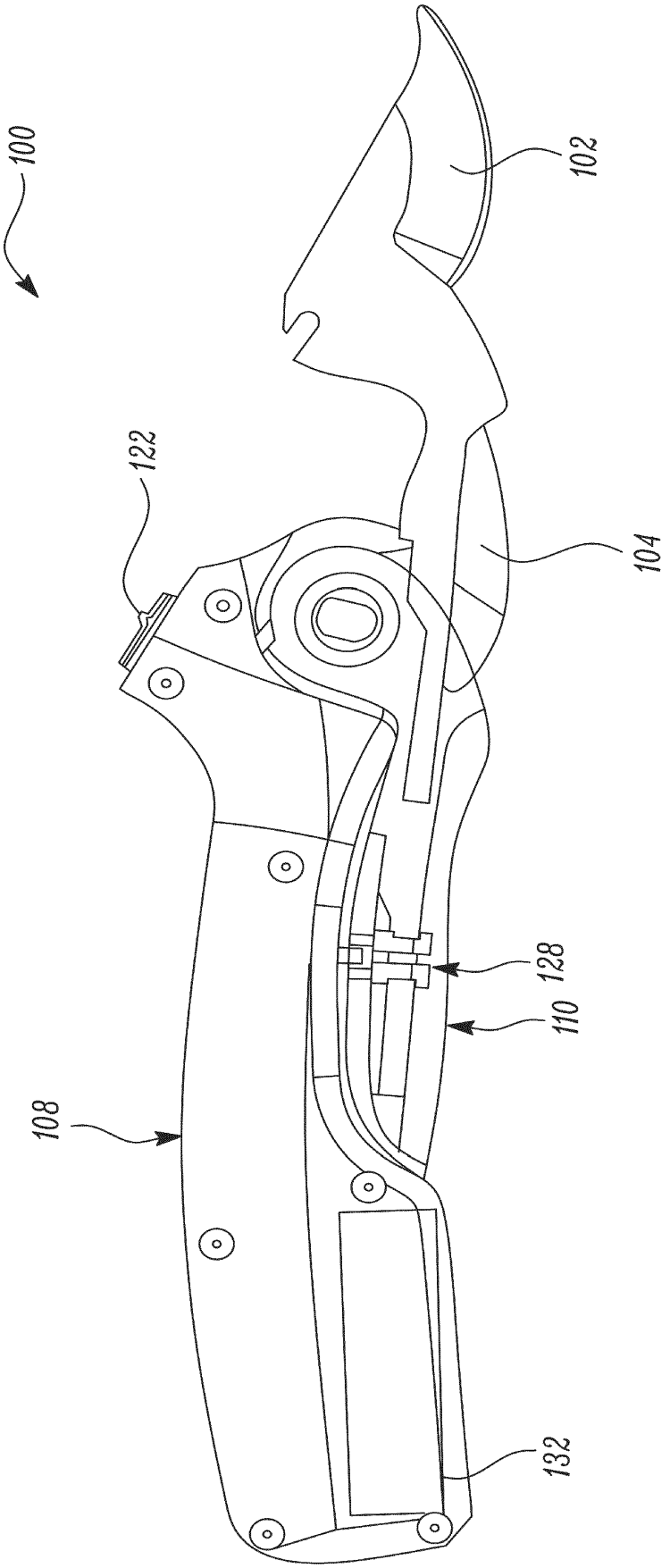

FIG. 5

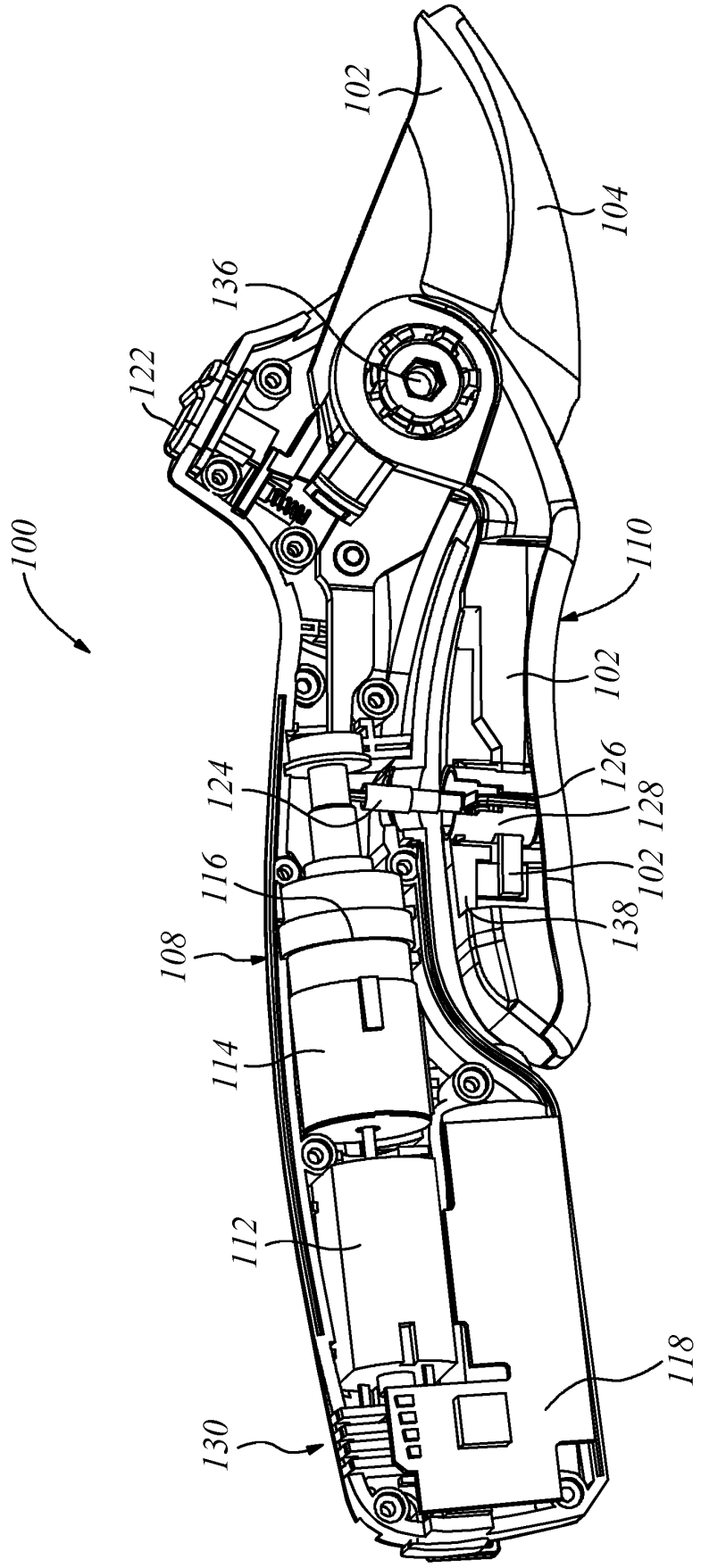
100
102
104
136
122
110
102
126
124
128
102
116
138
108
114
112
118
130

FIG 6

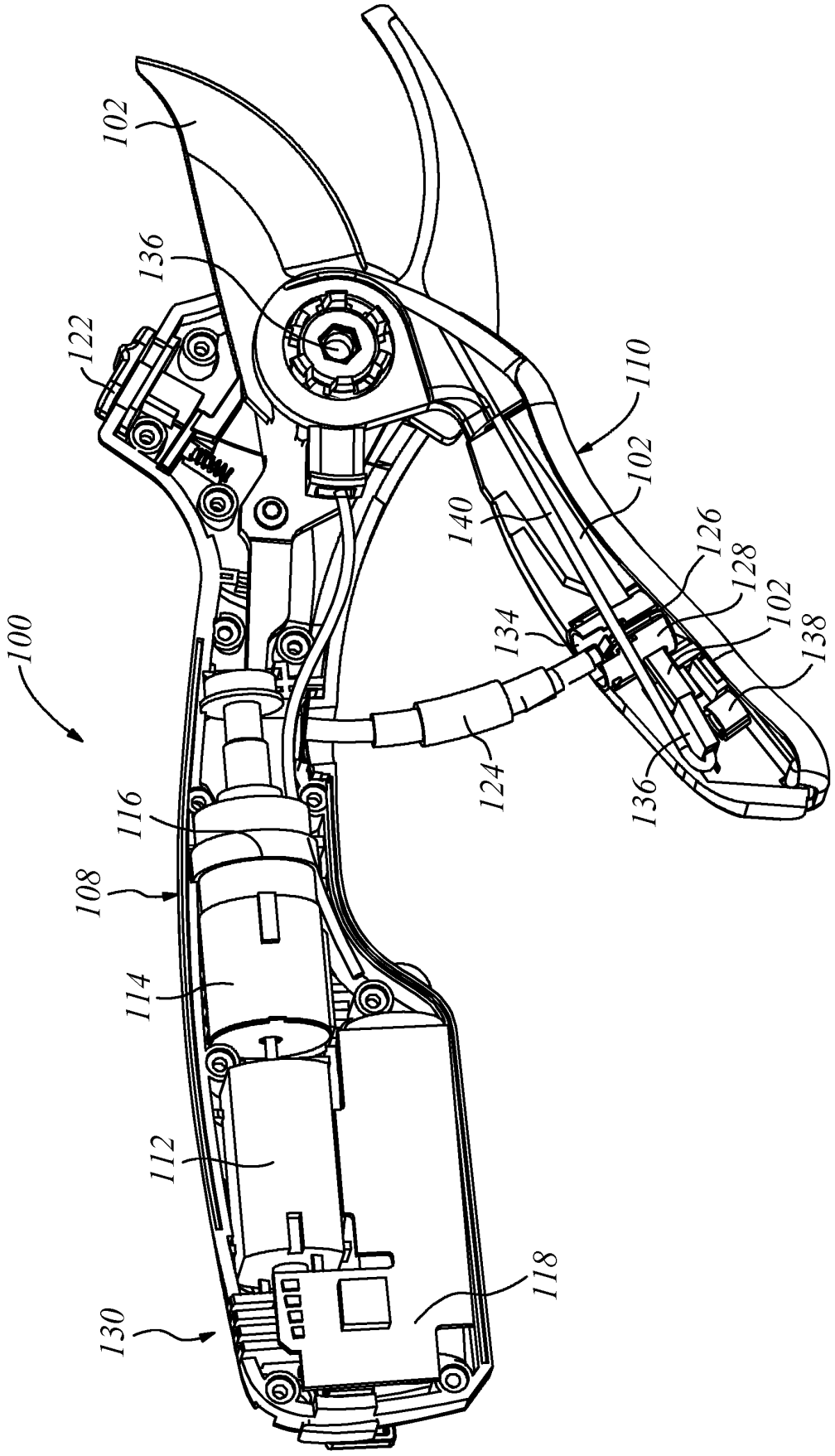
100
102
136
122
110
102
140
126
128
102
134
138
124
136
116
108
114
112
118
130

FIG 7

REFERENCES CITED IN THE DESCRIPTION

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