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(54) **Chainsaw, particularly for trimming trees and bushes**

(57) A chainsaw (10) with motorized chain, particularly for trimming trees and bushes, comprising

- a body (11) of the chainsaw (10),
- a bar (12) for guiding the toothed chain (13), which protrudes at the front from the body (11) that supports it,
- an electric motor (14) for driving the chain (13), which is substantially contained in the body (11),
- an articulation (15) for connection of the body (11) to a handle (16) of the chainsaw (10).

The articulation (15) is located to the rear of the body

(11) and defines an oscillation axis (A) of the handle (16) with respect to the body (11) for their mutual reversible rotation at least between

- a transverse configuration, in which the handle (16) protrudes to the rear of the body (11) along a direction (B) that is substantially transverse to the direction of extension (C) of the bar (12), and
- an aligned configuration, in which the handle (16) protrudes to the rear from the body (11) along a direction (D) that is substantially parallel to the direction of extension (C) of the bar (12).

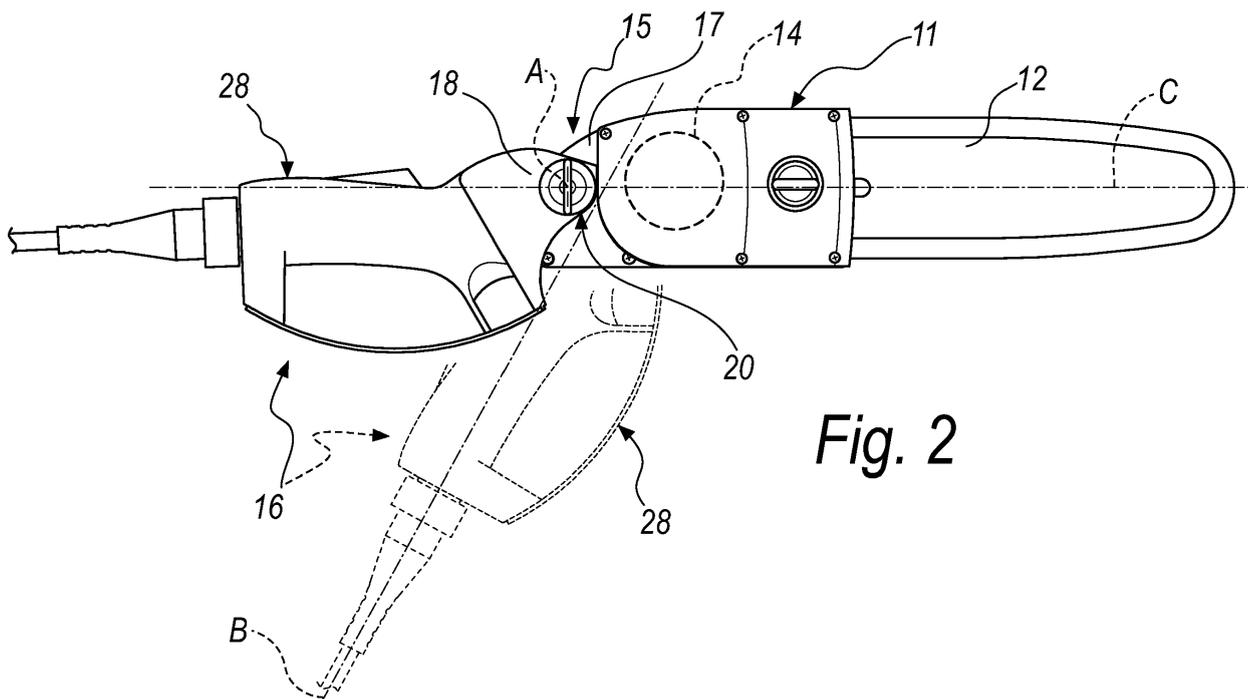


Fig. 2

Description

[0001] The present invention relates to a chainsaw.

[0002] A chainsaw is particularly useful for trimming trees and bushes.

[0003] Nowadays, in the field of production of equipment for agriculture and for gardening, portable motorized chainsaws are known for cutting or trimming plants.

[0004] These are provided with a body that supports the bar for guiding the toothed chain and the motor for the actuation thereof.

[0005] A grip handle is fixed to the body in order to enable the user to easily handle the chainsaw.

[0006] Nowadays chainsaws are commonly known which are provided with the handle that protrudes to the rear of the motor, to the front of which the bar protrudes, an auxiliary handle being moreover provided fixed to the body of the chainsaw in an upward region with respect to the motor.

[0007] The effective use of this type of chainsaw thus requires the use of both hands by the user, since the grip of the auxiliary handle is used to support the weight of the chainsaw, while the grip of the rear handle is necessary in order to easily direct the action of the chainsaw, as well as to operate it, the commands being generally provided thereupon.

[0008] Conventional models, lightweight and reduced in size, comprise only the rear handle, which extends substantially in line with the bar.

[0009] This configuration, however, tends to make the use of this type of chainsaw tiring.

[0010] In fact, their center of gravity is generally located forward toward the bar, therefore the user during use not only has to support the weight of the chainsaw, but also has to balance the moment of the weight force that tends to direct the bar toward the ground.

[0011] Thus, the user tends to notice, even after a short time of using this type of chainsaw, a sensation of fatigue in the wrist of the hand that is gripping the chainsaw.

[0012] In the European patent application no. EP2072200, in the name of Pellenc SA, a chainsaw is proposed that has a pistol grip handle, i.e. which protrudes in a downward region with respect to the motor.

[0013] In this manner, the handle is brought closer to the center of gravity of the chainsaw, than in the chainsaws described previously, so that the use thereof is less burdensome for the wrist joint.

[0014] However, this configuration, in which the grip handle protrudes in a direction substantially perpendicular to the bar, is inconvenient owing to the encumbrance thereof when it is necessary to act in order to saw through a chosen branch or trunk which is comprised in a thick bunch of other branches or bushes.

[0015] A drawback likewise strongly felt by users of conventional chainsaws, described up to now, consists in that they allow the user a limited radius of action.

[0016] Thus, for example, in order to reach the higher branches, the operator has to use a ladder or use a dif-

ferent tool, designed especially for the purpose, which consists of a telescopic bar to the end of which the chainsaw is fixed.

[0017] The aim of the present invention is to provide a chainsaw that makes it possible to overcome the drawbacks displayed by the structures of conventional chainsaws, specifically by enabling a less tiring use than the chainsaws known today and likewise by making it possible to obtain radii of action that are significantly more extended than those allowed by the chainsaws available today.

[0018] Within this aim, an object of the invention is to provide a chainsaw that is adaptable to the cut to be performed and to the region of work in which it is contingently used.

[0019] Another object of the invention is to provide a chainsaw that is more practical to use and less tiring than the chainsaws known today.

[0020] Another object of the invention is to provide a chainsaw that is more manageable than the chainsaws known today, and which with respect to these likewise permits a greater flexibility of use.

[0021] Another object of the invention is to provide a chainsaw that is structurally simple and easy to use, and which can be made at low cost.

[0022] This aim and these and other objects which will become better apparent hereinafter, are achieved by a chainsaw, particularly for trimming trees and bushes, comprising

- a body of the chainsaw,
- a bar for guiding the toothed chain, which protrudes at the front from said body that supports it,
- an electric motor for driving the chain, which is substantially contained in said body,

characterized in that it has an articulation for the connection of said body to a handle of said chainsaw, said articulation being located to the rear of said body and defining an oscillation axis of said handle with respect to said body for their mutual reversible rotation at least between

- a transverse configuration, in which said handle protrudes to the rear of said body along a direction that is substantially transverse to the direction of extension of said bar, and
- an aligned configuration, in which said handle protrudes to the rear from said body along a direction that is substantially parallel to the direction of extension of said bar.

[0023] Further characteristics and advantages of the invention will become better apparent from the description of a preferred, but not exclusive, embodiment of the chainsaw according to the invention, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a partially exploded perspective view of a chainsaw according to the invention;

Figure 2 is a side elevation view of the chainsaw according to the invention;

Figure 3 is a perspective view of the chainsaw according to the invention;

Figure 4 is a partially exploded perspective view of an enlarged detail of the chainsaw according to the invention;

Figure 5 is an enlarged and partially sectional view of a detail of the chainsaw according to the invention.

[0024] With reference to the figures, the reference numeral 10 generally designates a chainsaw, particularly for trimming trees and bushes, that comprises

- a body 11 of the chainsaw 10,
- a bar 12 for guiding the toothed chain, which in the accompanying figures is shown schematically and is designated with the reference numeral 13, the bar 12 protruding at the front from the body 11 that supports it,
- an electric motor 14 for driving the chain 13, which is substantially contained in the body 11.

[0025] According to the invention, the chainsaw 10 is provided with an articulation 15 for connection of the body 11 to a handle 16 of the chainsaw 10.

[0026] The articulation 15 according to the invention is located to the rear of the body 11 and defines an oscillation axis A of the handle 16 with respect to the body 11 for their mutual reversible rotation at least between

- a transverse configuration, in which the handle 16 protrudes to the rear of the body 11 along a direction B that is substantially transverse to the direction of extension C of the bar 12, as shown by way of non-limiting example with a dotted line in Figure 2, and
- an aligned configuration, in which the handle 16 protrudes to the rear from the body 11 along a direction D that is substantially parallel to the direction of extension C of the bar 12.

[0027] Advantageously, the articulation 15 comprises

- a first hinge part 17, which is integral with the body 11 and protrudes to the rear from it, and
 - a second hinge part 18, which is integral with the handle 16,
 - a pivot 19 for the mutual pivoting of the hinge parts 17 and 18, the oscillation axis A being defined by the axis of the pivot 19,
 - means 20 for locking and releasing the mutual rotation of the hinge parts 17 and 18 about the oscillation axis A.

[0028] Preferably, the locking and release means 20

comprise two heads 21 and 22 for clamping the hinge parts 17 and 18, in order to lock them by friction against each other.

[0029] Of the heads 21 and 22, conveniently a first one 21 is integrally fixed to a first end 19a of the pivot 19, the second one 22 being provided with a female thread 23 for mating with the second end 19b of the pivot 19, which is threaded.

[0030] The hinge parts 17 and 18 are conveniently comprised between the heads 21 and 22 and clamped between these so as to prevent their mutual rotation when the second head 22 and the pivot 19 are tightened.

[0031] Advantageously, a chosen one of the heads 21 and 22, which in the accompanying figures is the second head 22, is shaped like a knob in order to be turned by the operator to tighten it or loosen it on the pivot 19.

[0032] Thus, in order to adjust the orientation of the handle 16 with respect to the body 11, the operator conveniently loosens the clamping between the two heads 21 and 22, thus loosening the second head 22 on the pivot 19, unscrewing it therefrom at least partially, then mutually rotates the handle 16 and the body 11 until the desired angle is obtained, in which the operator locks them by re-tightening the second head 22 on the pivot 19.

[0033] Conveniently the female thread 23 is provided by embedding a threaded nut in the material of which the second head 22 is made.

[0034] In particular, the hinge parts 17 and 18 conveniently are provided with mutual abutment walls 24 and 25 which are shaped with protrusions 26, and complementary recesses 27, which are arranged circumferentially along the oscillation axis A so as to define preferential locking angles of the handle 16 with respect to the body 11.

[0035] Preferably, the handle 16 comprises

- a handgrip 28 which is contoured ergonomically for direct grip by the user and is provided, at a first end 28a, with the second hinge part 18,
- a stem 29, which can be extended and shortened telescopically and is provided, at a first end, with a contoured element for grip by the user, not shown in the accompanying figures,
- a connector 30 for connecting the handgrip 28 to the stem 29.

[0036] The connector 30 advantageously is provided with

- a first part 30a which is shaped complementarily to the second end 28b of the handgrip 28 in order to be fitted thereon,
- a second part 30b which is shaped complementarily to the second end 29a of the stem 29 in order to be fitted thereon,
- means 31 for fixing the connector 30 to the handgrip 28 and to the stem 29 when it is fitted thereon, for their mutual integral connection.

[0037] The connector 30 conveniently has a centrally folding structure comprising two half-shells 32 and 33 which are mutually pivoted along a longitudinal direction E of interconnection between the handgrip 28 and the stem 29.

[0038] Conveniently, the first part 30a of the connector 30 comprises front portions 32a and 33a of the half-shells 32 and 33 which are shaped complementarily to the second end 28b of the handgrip 28 in order to enclose it between them, the second part 30b of the connector 30 comprising rear portions 32b and 33b of the half-shells 32 and 33 which are shaped complementarily to the second end 29a of the stem 29 in order to enclose it between them.

[0039] The fixing means 31 preferably comprise elements for the mutual connection of the half-shells 32 and 33 such as for example screws 31a.

[0040] Use of a chainsaw 10, according to the invention, is the following.

[0041] In order to saw through material that is easily accessible to the operator, the latter frees the handgrip 28 from the connector 30 and from the stem 29, so as to be able to grip it directly.

[0042] Then, the operator adjusts the angle of the handgrip 28 with respect to the body 11 according to the contingent conditions of use of the chainsaw 10, by loosening the locking and release means 20, subsequently rotating the handgrip 28 with respect to the body 11 about the oscillation axis A until the desired angle is reached, and then proceeding to lock them in such configuration by re-tightening the locking and release means 20.

[0043] In order to reach for example high branches to be trimmed, the operator, having adjusted the angle of the handgrip 28 with respect to the body 11, connects the stem 29 thereto by way of the connector 30.

[0044] In particular such connection is achieved by closing the two half-shells 32 and 33 onto each other, simultaneously comprising between them the second end 28b of the handgrip 28 and the second end 29a of the stem 29, and then fixing the half-shells 32 and 33 by way of the screws 31a.

[0045] Advantageously, a first one 32 of the half-shells 32 and 33 is provided with a tooth 34 for engagement in a corresponding hole 35 provided on the second end 29a of the stem 29, thus, when the connector 30 is closed on the second end 29a, the tooth 34 engages the hole 35 thus preventing the extraction of the stem 29 from the connector 30 and likewise preventing the rotation thereof, by mutually integrally connecting them.

[0046] In practice it has been found that the invention fully achieves the intended aim and objects, by providing a chainsaw that makes it possible to overcome the drawbacks exhibited by the structures of conventional chainsaws, particularly by enabling a less tiring use than the chainsaws known today, thanks to the ability to adjust the orientation of the handgrip with respect to the bar, and likewise by making it possible to obtain radii of action that are significantly more extended than those allowed

by the chainsaws available today, thanks to the ability to extend the handle by joining the stem to the handgrip by way of the connector.

[0047] A chainsaw according to the invention is moreover adaptable to the cut to be performed and to the region of work in which it is contingently used, by orienting the bar at will with respect to the handle.

[0048] Moreover, a chainsaw according to the invention is more practical to use and less tiring than the chainsaws known today, the orientation of the bar with respect to the handle being adaptable to the type of work to be performed.

[0049] A chainsaw according to the invention is likewise more manageable than the chainsaws known today, and with respect to these it permits a greater flexibility of use.

[0050] In addition, a chainsaw according to the invention is structurally simple and easy to use, and can be produced at low cost.

[0051] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0052] In practice the materials employed, provided they are compatible with the specific use, as well as the contingent dimensions and shapes, may be any according to requirements and to the state of the art.

[0053] The disclosures in Italian Patent Application No. PD2011A000060 from which this application claims priority are incorporated herein by reference.

[0054] Where technical features mentioned in any claim are followed by reference signs, such reference signs have been inserted for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A chainsaw (10) with motorized chain, particularly for trimming trees and bushes, comprising
 - a body (11) of the chainsaw (10),
 - a bar (12) for guiding the toothed chain (13), which protrudes at the front from said body (11) that supports it,
 - an electric motor (14) for driving the chain (13), which is substantially contained in said body (11),**characterized in that** it has an articulation (15) for the connection of said body (11) to a handle (16) of said chainsaw (10), said articulation (15) being located to the rear of said body (11) and defining an oscillation axis (A) of said handle (16) with respect to said body (11) for their mu-

- tual reversible rotation at least between
- a transverse configuration, in which said handle (16) protrudes to the rear of said body (11) along a direction (B) that is substantially transverse to the direction of extension (C) of said bar (12), and
 - an aligned configuration, in which said handle (16) protrudes to the rear from said body (11) along a direction (D) that is substantially parallel to the direction of extension (C) of said bar (12).
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2. The chainsaw according to claim 1, **characterized in that** said articulation (15) comprises
- a first hinge part (17), which is integral with said body (11) and protrudes to the rear from it, and
 - a second hinge part (18), which is integral with said handle (16),
 - a pivot (19) for the mutual pivoting of said hinge parts (17, 18), said oscillation axis (A) being defined by the axis of said pivot (19),
 - means (20) for locking and releasing the mutual rotation of said hinge parts (17, 18) about said oscillation axis (A).
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3. The chainsaw according to claim 2, **characterized in that** said locking and release means (20) comprise two heads (21, 22) for clamping said hinge parts (17, 18) in order to lock them by friction against each other, a first one (21) of said heads (21, 22) being integrally fixed to a first end (19a) of said pivot (19), the second one (22) being provided with a female thread (23) for mating with the second, threaded, end (19b) of said pivot (19), said hinge parts (17, 18) being comprised between said heads (21, 22) and being clamped between them so as to prevent their mutual rotation when said second head (22) and said pivot (19) are tightened reversibly.
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4. The chainsaw according to claim 3, **characterized in that** a chosen one of said heads (21, 22) is shaped like a handgrip (28) in order to be turned by the operator to tighten or loosen said pivot (19) with respect to said second head (22).
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5. The chainsaw according to one or more of claims 2 to 4, **characterized in that** said hinge parts (17, 18) are provided with mutual abutment walls (24, 25), which are shaped with protrusions (26) and complementary recesses (27) which are arranged circumferentially along said oscillation axis (A) so as to define preferential locking angles of said handle (16) with respect to said body (11).
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6. The chainsaw according to one or more of the preceding claims, **characterized in that** said handle (16) comprises
- a handgrip (28) which is contoured ergonomically for direct grip by the user and is provided, at a first end (28a), with said second hinge part (18),
 - a stem (29), which can be extended and shortened telescopically and is provided, at a first end, with a contoured element for grip by the user,
 - a connector (30) for connecting said handgrip (28) to said stem (29), said connector (30) having
 - a first part (30a) which is shaped complementarily to the second end (28b) of said handgrip (28) in order to be fitted thereon,
 - a second part (30b) which is shaped complementarily to the second end (29a) of said stem (29) in order to be fitted thereon,
 - means (31) for fixing said connector (30) to said handgrip (28) and to said stem (29) when it is fitted thereon, for their mutual integral connection.
7. The chainsaw according to claim 6, **characterized in that** said connector (30) has a centrally folding structure which comprises two half shells (32, 33), which are mutually pivoted along a longitudinal direction (E) of interconnection between said handgrip (28) and said stem (29), said first part (30a) of said connector (30) comprising front portions of said half-shells (32, 33) which are shaped complementarily to said second end (28b) of said handgrip (28) in order to enclose it between them, said second part (30b) of said connector (30) comprising rear portions (32b, 33b) of said half-shells (32, 33) which are shaped complementarily to said second end (29a) of said stem (29) in order to enclose it between them, said fixing means (31) comprising elements for the mutual connection of said half-shells (32, 33).

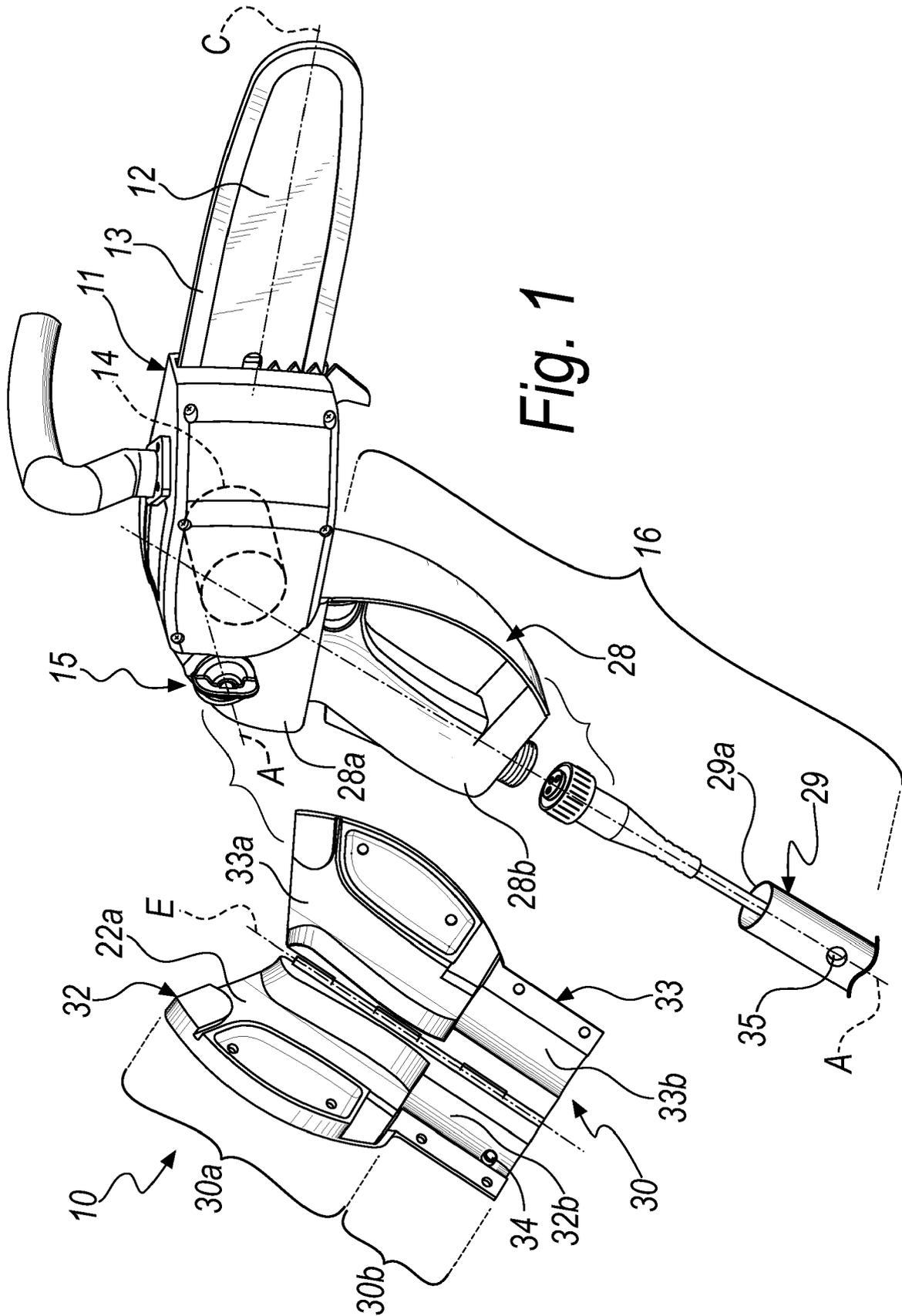
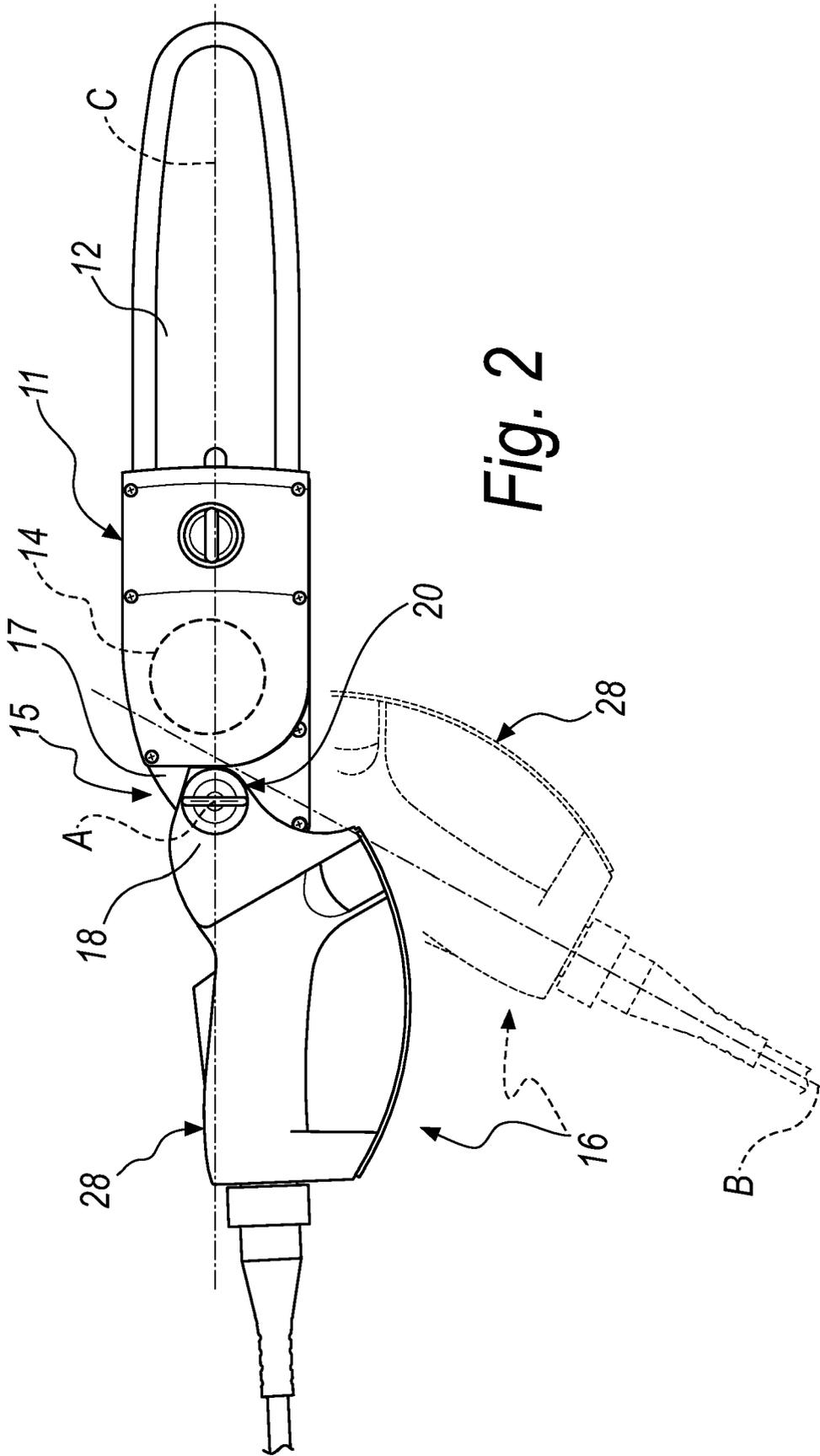


Fig. 1



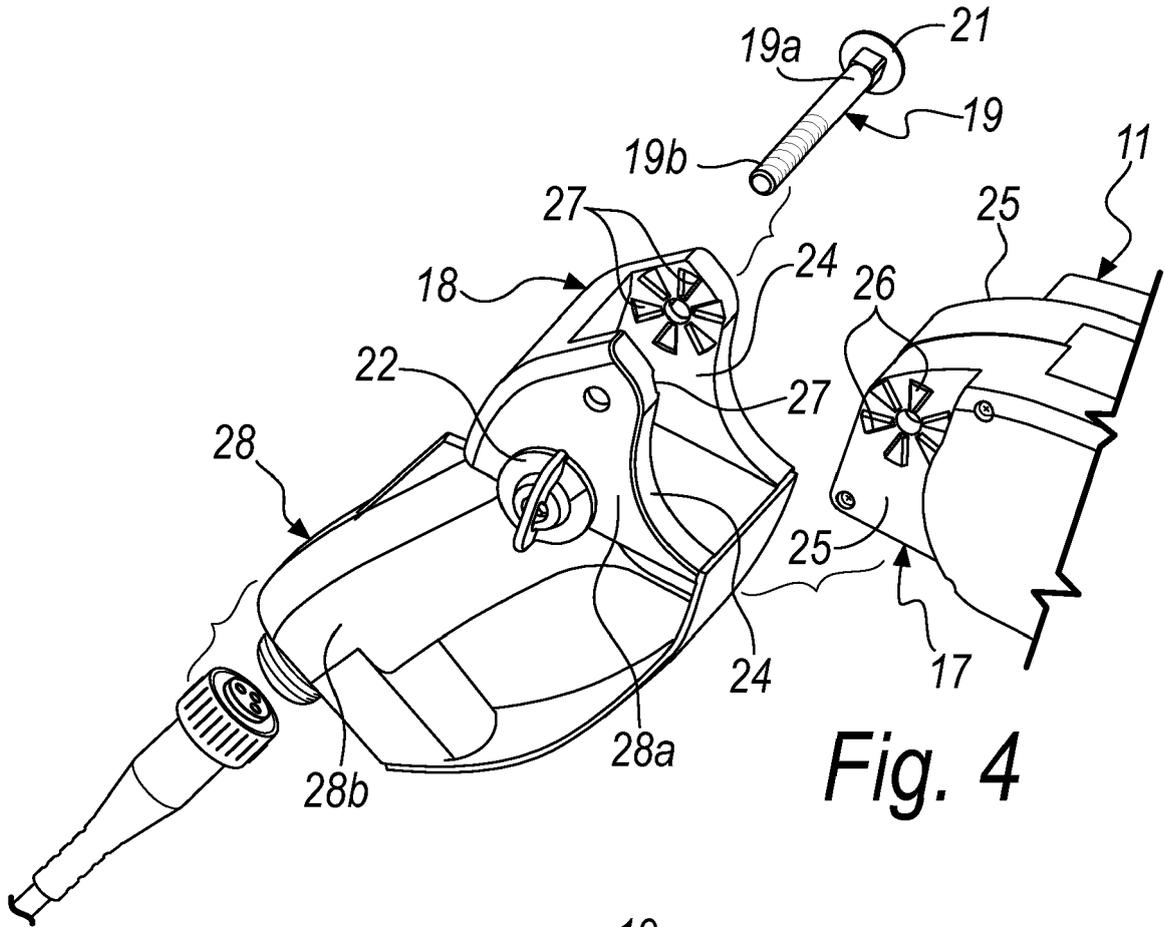


Fig. 4

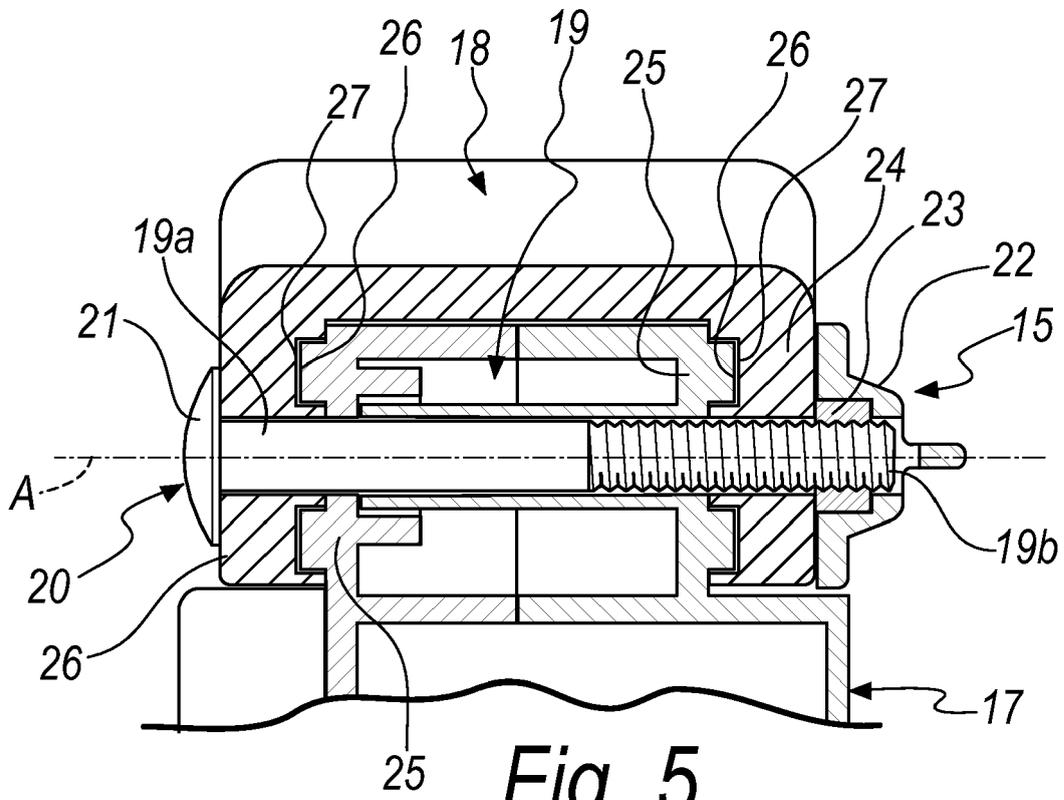


Fig. 5



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