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(54) **SAW CHAIN GUIDE BAR**

FÜHRUNGSSCHIENE FÜR SÄGEKETTE

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**WO-A1-01/87050 US-B1- 6 397 452
US-B1- 6 397 475**

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Description

FIELD OF THE INVENTION AND PRIOR ART

[0001] The present invention relates to a saw chain guide bar according to the preamble of claim 1, which is configured for attachment to a chainsaw cutting device of a tree harvester and which is intended to be used for spraying a liquid onto an exposed end surface of a tree stump that remains after the felling of a tree.

[0002] A tree stump remaining after the felling of a tree may be infected by fungus spores through the air and the resulting fungus growth may cause root rot, which may be transmitted from the infected tree stump to healthy and growing trees in the surroundings via the root system. In order to prevent the development of such root rot in a tree stump, the cut surface of the tree stump may be coated with a suitable treatment liquid in connection with the felling of the tree by means of a tree harvester. The treatment liquid may for instance be a chemical fungicide, such as an urea solution, or a water suspension of spores of harmless fungi which are antagonists or competitors to the harmful fungi. It is previously known to use the saw chain guide bar of a chainsaw cutting device of a tree harvester in order to apply a treatment liquid onto the cut surface of a tree stump by spraying in connection with the felling of a tree. Such a guide bar may for instance be of the type previously known from US 6 397 452 B1 or WO 01/87050 A1 where a liquid feed channel is provided along a part of the guide bar, wherein spray outlet orifices are distributed along the length of the liquid feed channel and a source of treatment liquid is connected to the liquid feed channel in order to supply pressurized treatment liquid into the liquid feed channel and allow the treatment liquid to be emitted through the spray outlet orifices as an array of liquid sprays directed towards the cut surface of a tree stump. With such a saw chain guide bar, the pressure of the treatment liquid drops as the treatment liquid moves through the liquid feed channel and passes the different spray outlet orifices, which may cause an uneven distribution of the treatment liquid over the cut surface of the tree stump.

[0003] It is desirable that the exposed cut surface of the tree stump is covered completely and evenly with the treatment liquid. It is also desirable to avoid a spraying of the treatment liquid onto vegetation and ground in the area around the tree stump, to thereby avoid negative environmental effects and a costly waste of treatment liquid. With a saw chain guide bar of the type disclosed in US 6 397 452 B1 or WO 01/87050 A1, the distribution of the spray outlet orifices along the liquid feed channel has to be adapted to the diameter of the trees to be cut in order to achieve an appropriate spray pattern over the cut surface of the tree stumps. If a saw chain guide bar of this previously known type is adapted for cutting of large diameter trees, a considerable amount of the sprayed treatment liquid will miss the cut surface of a tree stump if the saw chain guide bar is also used for cutting a tree of

smaller diameter. If a saw chain guide bar of this previously known type is adapted for cutting of small diameter trees, the sprayed treatment liquid will not cover the entire area of the cut surface of a tree stump if the saw chain guide bar is also used for cutting a tree of larger diameter.

SUMMARY OF THE INVENTION

[0004] The object of the present invention is to achieve a further development of a saw chain guide bar of the above-mentioned type so as to provide a saw chain guide bar that is improved in at least some aspect.

[0005] According to the invention, this object is achieved by means of a saw chain guide bar having the features defined in claim 1.

[0006] The saw chain guide bar of the present invention comprises:

- an elongated guide bar body, which has a rear end and an opposite nose end, wherein the guide bar body at its rear end has an attachment section configured for attachment to a chainsaw cutting device of a tree harvester and wherein the guide bar body has a first side face extending between the rear end and the nose end and an opposite second side face extending between the rear end and the nose end; and
- a liquid feed channel extending along a part of the guide bar body from the attachment section towards the nose end, the liquid feed channel having an upstream end located at the attachment section and a downstream end located at a distance from the attachment section.

[0007] At its upstream end, the liquid feed channel has an inlet opening, through which the liquid feed channel is configured to receive pressurized liquid. At its downstream end, the liquid feed channel has an outlet with at least one spray outlet orifice facing the rear end or the nose end of the guide bar body. This outlet and its spray outlet orifice are in the following referred to as "first outlet" and "first spray outlet orifice", respectively. The first outlet is in fluid communication with the inlet opening of the liquid feed channel and configured to emit liquid received therefrom as a liquid spray through the first spray outlet orifice in a direction towards the rear end of the guide bar body if the first spray outlet orifice faces the rear end of the guide bar body or in a direction towards the nose end of the guide bar body if the first spray outlet orifice faces the nose end of the guide bar body.

[0008] The guide bar body is provided with a spray guiding groove, in the following referred to as "first spray guiding groove", formed as an outwardly open elongated recess in the first side face of the guide bar body, wherein the first spray outlet orifice opens into the first spray guiding groove and the first spray guiding groove extends from said first outlet of the liquid feed channel in a direc-

tion towards the rear end of the guide bar body if the first spray outlet orifice faces the rear end of the guide bar body or in a direction towards the nose end of the guide bar body if the first spray outlet orifice faces the nose end of the guide bar body.

[0009] When liquid is to be applied from the above-mentioned liquid feed channel onto a cut surface of a tree stump, the saw chain guide bar is to be moved across the tree to be felled with the above-mentioned first side face of the guide bar body facing the cut surface of the tree stump. With the saw chain guide bar of the present invention, the above-mentioned spray outlet orifice will emit a liquid spray in a direction along the guide bar body and the associated spray guiding groove will allow this liquid spray to be distributed along the guide bar body before hitting the cut surface of a tree stump. Liquid from one single liquid spray may hereby be distributed over a larger area on a cut surface of a tree stump when the saw chain guide bar is swept over the surface. It is hereby possible to dispense with an arrangement of an array of spray outlet orifices along the length of the liquid feed channel, which in its turn implies that the above-mentioned pressure drop along the liquid feed channel is avoided. With the saw chain guide bar of the present invention, it will also be possible to adjust the reach of the emitted liquid spray by adjustment of the pressure of the liquid supplied to the liquid feed channel, which in its turn makes it possible to adapt the spray pattern in a quick and simple manner in dependence on the diameter of the trees to be cut. The exposed cut surface of the tree stumps may hereby be covered completely and evenly with the sprayed liquid with a limited waste of liquid.

[0010] An embodiment of the invention is characterized in:

- that said at least one first spray outlet orifice faces the nose end of the guide bar body;
- that the liquid feed channel at its downstream end also has a second outlet with at least one second spray outlet orifice facing the rear end of the guide bar body, wherein this second outlet is in fluid communication with the inlet opening and configured to emit liquid received therefrom as a liquid spray through said at least one second spray outlet orifice in a direction towards the rear end of the guide bar body; and
- that the guide bar body is provided with a second spray guiding groove formed as an outwardly open elongated recess in the first side face of the guide bar body, wherein said at least one second spray outlet orifice opens into the second spray guiding groove and the second spray guiding groove extends from said second outlet of the liquid feed channel in a direction towards the rear end of the guide bar body.

[0011] In this case, liquid sprays will be emitted from the liquid feed channel in two opposite directions, or at least essentially opposite directions, along the guide bar

body, which will ensure an efficient distribution of liquid over a cut surface of a tree stump.

[0012] The first outlet preferably has one single first spray outlet orifice and that the second outlet preferably has one single second spray outlet orifice. Furthermore, the first spray outlet orifice and the second spray outlet orifice are preferably aligned with each other.

[0013] According to another embodiment of the invention, the total cross-sectional area of all spray outlet orifices of the liquid feed channel is smaller than the cross-sectional area of the inlet opening of the liquid feed channel. Pressure drop in the liquid feed channel is hereby avoided, which is favourable with respect to the formation of the liquid spray or sprays. When the liquid feed channel is provided with one single first outlet orifice and one single second outlet orifice, the sum of the cross-sectional area of the first spray outlet orifice and the cross-sectional area of the second spray outlet orifice is in this case smaller than the cross-sectional area of the inlet opening.

[0014] Each spray guiding groove preferably extends in a straight line, or at least essentially straight line, along a part of the first side face of the guide bar body. Furthermore, the first and second spray guiding grooves are preferably aligned with each other.

[0015] According to another embodiment of the invention, each spray guiding groove has an inclined bottom surface, which has such an inclination that the depth of the spray guiding groove is gradually decreasing as seen in a direction from a first end of the spray guiding groove facing the associated outlet of the liquid feed channel to an opposite second end of the spray guiding groove.

[0016] According to another embodiment of the invention, the liquid feed channel comprises:

- a straight, or at least essentially straight, first part that extends from the attachment section of the guide bar body to a middle section of the guide bar body located at the middle of the guide bar body as seen in the longitudinal direction thereof, this first part being free from spray outlet orifices;
- a straight, or at least essentially straight, second part that extends at an angle of 80-100°, preferably 90°, to the first part, said spray outlet orifice or orifices being provided in this second part; and
- a curved third part that forms a connection between said first part and said second part, this third part being free from spray outlet orifices.

[0017] However, the liquid feed channel may of course also be designed in any other suitable manner.

[0018] The liquid feed channel is with advantage formed by an elongated tube, which is mounted in an elongated tube-accommodating groove in the first side face of the guide bar body. In this case, a bottom surface of the tube-accommodating groove may have:

- an inclined first ramp section at a first end of the tube-

accommodating groove, wherein this first ramp section has such an inclination that the depth of the tube-accommodating groove is gradually increasing as seen in a direction from a first end of the first ramp section facing the first end of the tube-accommodating groove to an opposite second end of the first ramp section; and

- an inclined second ramp section at a second end of the tube-accommodating groove, wherein this second ramp section has such an inclination that the depth of the tube-accommodating groove is gradually increasing as seen in a direction from a first end of the second ramp section facing the second end of the tube-accommodating groove to an opposite second end of the second ramp section.

[0019] If the above-mentioned elongated tube is an open-ended tube of rather soft metal material, such as aluminium or copper, and mounted to the tube-accommodating groove in a previously known manner by being pressed into this groove with such a force that the wall of the tube is deformed into a shape essentially corresponding to the shape of the groove, the initially open ends of the tube may be sealed by clamping by being pressed against said ramp sections at the ends of the groove.

[0020] Another embodiment of the invention is characterized in:

- that the saw chain guide bar comprises an additional liquid feed channel, which extends along a part of the guide bar body from the attachment section towards the nose end, the additional liquid feed channel having an upstream end located at the attachment section and a downstream end located at a distance from the attachment section, wherein the additional liquid feed channel at its upstream end has an inlet opening, through which the additional liquid feed channel is configured to receive pressurized liquid;
- that the additional liquid feed channel at its downstream end has a first outlet with at least one first spray outlet orifice facing the nose end of the guide bar body and a second outlet with at least one second spray outlet orifice facing the rear end of the guide bar body, wherein the first outlet of the additional liquid feed channel is in fluid communication with the inlet opening of the additional liquid feed channel and configured to emit liquid received therefrom as a liquid spray through said at least one first spray outlet orifice in a direction towards the nose end of the guide bar body, and wherein the second outlet of the additional liquid feed channel is in fluid communication with the inlet opening of the additional liquid feed channel and configured to emit liquid received therefrom as a liquid spray through said at least one second spray outlet orifice in a direction towards the rear end of the guide bar body;
- that the guide bar body is provided with a third spray guiding groove formed as an outwardly open elongated

recess in the second side face of the guide bar body, wherein said at least one first spray outlet orifice of the additional liquid feed channel opens into the third spray guiding groove and the third spray guiding groove extends from the first outlet of the additional liquid feed channel in a direction towards the nose end of the guide bar body; and

- that the guide bar body is provided with a fourth spray guiding groove formed as an outwardly open elongated recess in the second side face of the guide bar body, wherein said at least one second spray outlet orifice of the additional liquid feed channel opens into the fourth spray guiding groove and the fourth spray guiding groove extends from the second outlet of the additional liquid feed channel in a direction towards the rear end of the guide bar body.

[0021] In this case, the saw chain guide bar may be attached to the chainsaw cutting device of a tree harvester in a first orientation such that the saw chain guide bar is moved across a tree to be felled with one of the longitudinal edges of the guide bar body as leading edge and with the first side face of the guide bar body facing the cut surface of the tree stump, and in an inverted second orientation such that the saw chain guide bar is moved across a tree to be felled with the other longitudinal edge of the guide bar body as leading edge and with the second side face of the guide bar body facing the cut surface of the tree stump. Thus, when the initial leading edge of the guide bar body becomes worn, the bar may be inverted such that the other longitudinal edge of the guide bar body will become a new leading edge. When the saw chain guide bar is attached to the chainsaw cutting device in said second orientation, liquid may be applied from the above-mentioned additional liquid feed channel onto a cut surface of a tree stump, and when the saw chain guide bar is attached to the chainsaw cutting device in said first orientation, liquid may be applied from the other liquid feed channel onto a cut surface of a tree stump.

[0022] Further advantageous features of the saw chain guide bar according to the present invention will appear from the description following below and the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] With reference to the appended drawings, a specific description of embodiments of the invention cited as examples follows below.

[0024] In the drawings:

Fig 1 is a perspective view of a saw chain guide bar according to an embodiment of the present invention,

Fig 2 is perspective views from another direction of the saw chain guide bar of Fig 1,

- Fig 3 is a planar view from a first side of the saw chain guide bar of Fig 1,
- Fig 4 is a planar view from an opposite second side of the saw chain guide bar of Fig 1,
- Fig 5 is a cut according to the line A-A in Fig 3,
- Fig 6 is a cut according to the line B-B in Fig 3,
- Fig 7 is a perspective view of a tube that is used for forming a liquid feed channel included in the saw chain guide bar of Fig 1,
- Fig 8 is a perspective view of a guide bar body included in the saw chain guide bar of Fig 1,
- Fig 9 is a perspective view of the liquid feed channel included in the saw chain guide bar of Fig 1,
- Fig 10 is a perspective view of a saw chain guide bar according to an alternative embodiment of the invention,
- Fig 11 is a planar view from a first side of a saw chain guide bar according to another alternative embodiment of the invention,
- Fig 12 is a planar view from an opposite second side of the saw chain guide bar of Fig 11, and
- Fig 13 is a cut according to the line C-C in Fig 11.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0025] A saw chain guide bar 1 according to a first embodiment of the present invention is illustrated in Figs 1-6. The saw chain guide bar 1 is to be attached to a chainsaw cutting device of a tree harvester and is intended to co-operate with a saw chain of said cutting device. The saw chain guide bar 1 comprises an plate-shaped and elongated guide bar body 2, which has a rear end 2b and an opposite nose end 2a. At its rear end 2b, the guide bar body 2 has an attachment section 3 configured for attachment of the saw chain guide bar 1 to a chainsaw cutting device of a tree harvester by clamping. The attachment section 3 is in a conventional manner provided with a centre slot 4, which is configured to receive clamping bolts of the chainsaw cutting device. The guide bar body 2 has a first side face 5a extending between the rear end 2b and the nose end 2a and an opposite second side face 5b extending between the rear end 2b and the nose end 2a. A first saw chain guide track 6a extends along a first longitudinal edge 7a of the guide bar body 2 and a second saw chain guide track 6b extends along the opposite second longitudinal edge 7b of the guide bar body 2. A sprocket wheel 8 is in a

conventional manner rotatably mounted to the guide bar body 2 at the nose end 2a thereof. A saw chain of the above-mentioned cutting device is to extend in a loop around the guide bar body 2 along the peripheral edge thereof while being in engagement with the sprocket wheel 8 and with the first and second saw chain guide tracks 6a, 6b. During a cutting operation, the saw chain is rotated and thereby driven along the peripheral edge of the guide bar body 2 by means of a driving motor of the cutting device.

[0026] A liquid feed channel 10 extends along a part of the guide bar body 2 from the attachment section 3 towards the nose end 2a, the liquid feed channel 10 having an upstream end 10a located at the attachment section 3 and a downstream end 10b located at a distance from the attachment section 3. At its upstream end 10a, the liquid feed channel 10 has an inlet opening 11, through which the liquid feed channel is configured to receive pressurized liquid. The liquid is for instance an urea solution or any other desired tree stump treatment liquid and may be supplied to the liquid feed channel 10 from a liquid reservoir in the tree harvester by means of a pump.

[0027] In the embodiment illustrated in Figs 1-6, the inlet of the liquid feed channel 10 comprises one single inlet opening 11, but the liquid feed channel 10 may as an alternative be provided with an inlet that comprises two or more inlet openings.

[0028] At its downstream end 10b, the liquid feed channel 10 has a first outlet 12a with a first spray outlet orifice 13a facing the nose end 2a of the guide bar body 2 and a second outlet 12b with a second spray outlet orifice 13b facing the rear end 2b of the guide bar body 2. The first and second outlets 12a, 12b are located opposite to each other on opposite sides of the liquid feed channel 10 and are both in fluid communication with the inlet opening 11 in order to receive liquid that has entered the liquid feed channel 10 through the inlet opening 11. The first spray outlet orifice 13a is configured to emit liquid from the liquid feed channel 10 as a liquid spray in a direction towards the nose end 2a of the guide bar body 2 and the second spray outlet orifice 13b is configured to emit liquid from the liquid feed channel 10 as a liquid spray in a direction towards the rear end 2b of the guide bar body 2. The first and second spray outlet orifices 13a, 13b are with advantage aligned with each other. Furthermore, the total cross-sectional area of the first and second spray outlet orifices 13a, 13b, i.e. the sum of the cross-sectional area of the first spray outlet orifice 13a and the cross-sectional area of the second spray outlet orifice 13, is preferably smaller than the cross-sectional area of the inlet opening 11.

[0029] The guide bar body 2 comprises a first spray guiding groove 15a, which is formed as an outwardly open elongated recess in the first side face 5a of the guide bar body 2 and which extends from the first outlet 12a of the liquid feed channel 10 along a part of the first side face 5a in a direction towards the nose end 2a of the guide bar

body 2. The guide bar body 2 also comprises a second spray guiding groove 15b, which is formed as an outwardly open elongated recess in the first side face 5a of the guide bar body 2 and which extends from the second outlet 12b of the liquid feed channel 10 along a part of the first side face 5a in a direction towards the rear end 2b of the guide bar body 2. The first spray outlet orifice 13a opens into the first spray guiding groove 15a and the first spray guiding groove is configured to receive the liquid spray emitted from the first spray outlet orifice 13a and allow this liquid spray to propagate along the length of the first spray guiding groove 15a in a direction towards the nose end 2a of the guide bar body 2. The second spray outlet orifice 13b opens into the second spray guiding groove 15b and the second spray guiding groove is configured to receive the liquid spray emitted from the second spray outlet orifice 13b and allow this liquid spray to propagate along the length of the second spray guiding groove 15b in a direction towards the rear end 2b of the guide bar body 2.

[0030] In the illustrated embodiment, each spray guiding groove 15a, 15b extends in a straight line, or at least essentially straight line, along a part of the first side face 5a of the guide bar body 2, wherein the first and second spray guiding grooves 15a, 15b are aligned with each other. However, the first spray guiding groove 15a and/or the second spray guiding groove 15b may as an alternative be slightly curved as seen in the longitudinal direction of the guide bar body 2, as long as it allows the received liquid spray to propagate a certain distance in the longitudinal direction of the guide bar body 2.

[0031] Each one of the first and second spray guiding grooves 15a, 15b preferably has a length of 80-200 mm and a width of 6-10 mm.

[0032] In the illustrated embodiment, each spray guiding groove 15a, 15b has an inclined bottom surface 16 (see Figs 1 and 6), which has such an inclination that the depth d of the spray guiding groove 15a, 15b is gradually decreasing as seen in a direction from a first end 17a of the spray guiding groove 15a, 15b facing the associated outlet 12a, 12b of the liquid feed channel 10 to an opposite second end 17b of the spray guiding groove 15a, 15b. However, each spray guiding groove 15a, 15b may as an alternative have one and the same depth all along its length or a depth that varies in any other suitable manner along the length thereof.

[0033] In the illustrated embodiment, the liquid feed channel 10 comprises:

- a straight, or at least essentially straight, first part 18a that extends from the attachment section 3 of the guide bar body 2 to a middle section 9 of the guide bar body 2 located at the middle of the guide bar body 2 as seen in the longitudinal direction thereof, this first part 18 being free from spray outlet orifices;
- a straight, or at least essentially straight, second part 18b that extends at an angle of 80-100°, preferably 90°, to the first part 18a, the first and second spray

outlet orifices 13a, 13b being provided in this second part 18b; and

- a curved third part 18c that forms a connection between said first part 18a and said second part 18b, this third part 18c being free from spray outlet orifices.

[0034] In the illustrated embodiment, the liquid feed channel 10 is formed by an elongated tube 19 (see Fig 7), which is mounted in an elongated tube-accommodating groove 20 (see Fig 8) in the first side face 5a of the guide bar body 2. The tube 19 is with advantage mounted to the tube-accommodating groove 20 in the manner described in US 6 397 475 B1, wherein the tube-accommodating groove 20 has undercut side walls 21, as illustrated in Fig 5. In this case, the tube 19 is made of soft and deformable metal material, such as aluminium or copper, and is originally made with a circular cross-sectional shape. The tube 19 is first bent in correspondence with the longitudinal shape of the tube-accommodating groove 20 and then positioned in this groove. After having been inserted into the tube-accommodating groove 20, the tube 19 is deformed by rolling or pressing until it fills the tube-accommodating groove 20 and conforms to the undercut side walls 21 thereof. The tube 19 is secured in the tube-accommodating groove 20 by having its cross-sectional shape deformed to conform to the undercut cross-sectional shape of the tube-accommodating groove. However, a channel-forming tube may of course also be secured to an associated tube-accommodating groove 20 in the guide bar body 2 in any other suitable manner. As a further alternative, the liquid feed channel 10 may be formed as an integrated part of the guide bar body 2, for instance by being formed as an outwardly covered recess in the guide bar body 2.

[0035] In the illustrated embodiment, the bottom surface 22 of the tube-accommodating groove 20 has:

- an inclined first ramp section 23a at a first end 20a of the tube-accommodating groove 20, wherein this first ramp section 23a has such an inclination that the depth of the tube-accommodating groove 20 is gradually increasing as seen in a direction from a first end of the first ramp section 23a facing the first end 20a of the tube-accommodating groove 20 to an opposite second end of the first ramp section 23a; and
- an inclined second ramp section 23b at a second end 20b of the tube-accommodating groove 20, wherein this second ramp section 23b has such an inclination that the depth of the tube-accommodating groove 20 is gradually increasing as seen in a direction from a first end of the second ramp section 23b facing the second end 20b of the tube-accommodating groove 20 to an opposite second end of the second ramp section 23b.

[0036] When the initially open-ended tube 19 is

pressed against the bottom surface 22 of the tube-accommodating groove 20 in connection with the mounting of the tube 19 to the guide bar body 2, the end sections 19a, 19b of the tube 19 are pressed against a respective one of the ramp sections 23a, 23b such that the end sections 19a, 19b are deformed by clamping against the ramp sections 23a, 23b and thereby sealed. Fig 9 illustrates the shape of the tube 19 when it has been deformed to conform to the shape of the tube-accommodating groove 20. As an alternative, the ends of the tube 19 may be sealed before the mounting thereof in the tube-accommodating groove 20. The inlet opening 11 and the spray outlet orifices 13a, 13b may be formed in the tube 19 before or after the mounting thereof in the tube-accommodating groove 20.

[0037] In the embodiment illustrated in Figs 1-6, the inlet opening 11 of the liquid feed channel 10 is facing the bottom surface 22 of the tube-accommodating groove 20, wherein the inlet opening 11 is aligned with and connected to a liquid supply hole 24 that extends through the guide bar body 2 between the second side face 5b and the tube-accommodating groove 20. Thus, in this case, the liquid enters the inlet opening 11 of the liquid feed channel 10 from the second side face 5b of the guide bar body 2 through the liquid supply hole 24. However, the inlet opening 11 of the liquid feed channel 10 may as an alternative be arranged on the outwardly facing side of the liquid feed channel 10, as illustrated in Fig 10. In the latter case, the liquid enters the inlet opening 11 of the liquid feed channel 10 from the first side face 5a of the guide bar body 2.

[0038] In the embodiment illustrated in Figs 1-6, the first outlet 12a of the liquid feed channel 10 comprises one single outlet orifice 13a, but the first outlet 12a may as an alternative be provided with two or more outlet orifices 13a facing the nose end 2a of the guide bar body 2. In the embodiment illustrated in Figs 1-6, also the second outlet 12b of the liquid feed channel 10 comprises one single outlet orifice 13b, but the second outlet 12b may as an alternative be provided with two or more outlet orifices 13b facing the rear end 2b of the guide bar body 2.

[0039] In the illustrated embodiment, the saw chain guide bar 1 has a liquid feed channel 10 with two opposite outlets 12a, 12b and two associated spray guiding grooves 15a, 15b. However, the saw chain guide bar 1 may as an alternative have a liquid feed channel 10 with one single outlet comprising a spray outlet orifice facing the rear end 2b or the nose end 2a of the guide bar body 2 and one single spray guiding groove. If the spray outlet orifice of this single outlet faces the rear end 2b of the guide bar body 2, it is configured to emit liquid from the liquid feed channel 10 as a liquid spray in a direction towards the rear end 2b of the guide bar body 2, wherein the associated spray guiding groove extends from the outlet in a direction towards the rear end 2b of the guide bar body 2. If the spray outlet orifice of said single outlet faces the nose end 2a of the guide bar body 2, it is configured to emit liquid from the liquid feed channel

10 as a liquid spray in a direction towards the nose end 2a of the guide bar body 2, wherein the associated spray guiding groove extends from the outlet in a direction towards the nose end 2a of the guide bar body 2.

[0040] In the embodiment illustrated in Figs 11-13, the saw chain guide bar 1 comprises a first liquid feed channel 10 of the type described above for emitting liquid sprays on the first side face 5a of the guide bar body 2 and an additional second liquid feed channel 10' of the same type for emitting liquid sprays on the opposite second side face 5b of the guide bar body 2. In this case, first and second spray guiding grooves 15a, 15b are formed as outwardly open elongated recesses in the first side face 5a of the guide bar body 2 as described above with reference to Figs 1-6, whereas corresponding third and fourth spray guiding grooves 15c, 15d are formed as outwardly open elongated recesses in the second side face 5b of the guide bar body 2. As to the rest, the saw chain guide bar 1 illustrated in Figs 11-13 corresponds to the saw chain guide bar 1 described above with reference to Figs 1-6. In this case, the saw chain guide bar 2 preferably has 180° rotational symmetry about a longitudinal centre axis 25 of the guide bar body 2.

[0041] In the embodiment illustrated in Figs 11-13, the first and second spray guiding grooves 15a, 15b are located on the first side face 5a of the guide bar body 2 adjacent to the first longitudinal edge 7a thereof, whereas the third and fourth spray guiding grooves 15c, 15d are located on the second side face 5b of the guide bar body 2 adjacent to the second longitudinal edge 7b thereof.

[0042] In the illustrated embodiments, the guide bar body 2 has the form of a solid body. However, the guide bar body 2 may as an alternative have the form of a laminated body formed by two or more separate plates.

[0043] The invention is of course not in any way restricted to the embodiments described above. On the contrary, many possibilities to modifications thereof will be apparent to a person with ordinary skill in the art without departing from the scope of the appended claims.

Claims

1. A saw chain guide bar comprising:

- an elongated guide bar body (2), which has a rear end (2b) and an opposite nose end (2a), wherein the guide bar body (2) at its rear end (2b) has an attachment section (3) configured for attachment to a chainsaw cutting device of a tree harvester and wherein the guide bar body (2) has a first side face (5a) extending between the rear end (2b) and the nose end (2a) and an opposite second side face (5b) extending between the rear end (2b) and the nose end (2a); and
- a liquid feed channel (10) extending along a part of the guide bar body (2) from the attach-

ment section (3) towards the nose end (2a), the liquid feed channel (10) having an upstream end (10a) located at the attachment section (3) and a downstream end (10b) located at a distance from the attachment section (3), wherein the liquid feed channel (10) at its upstream end (10a) has an inlet opening (11), through which the liquid feed channel (10) is configured to receive pressurized liquid,

characterized

in:

- **that** the liquid feed channel (10) at its downstream end (10b) has a first outlet (12a) with at least one first spray outlet orifice (13a) facing the nose end (2a) or the rear end (2b) of the guide bar body (2), wherein this first outlet (12a) is in fluid communication with the inlet opening (11) and configured to emit liquid received therefrom as a liquid spray through said at least one first spray outlet orifice (13a) in a direction towards the nose end (2a) of the guide bar body (2) if said at least one first spray outlet orifice (13a) faces the nose end (2a) or in a direction towards the rear end (2b) of the guide bar body (2) if said at least one first spray outlet orifice (13a) faces the rear end (2b); and
 - **that** the guide bar body (2) is provided with a first spray guiding groove (15a) formed as an outwardly open elongated recess in the first side face (5a) of the guide bar body (2), wherein said at least one first spray outlet orifice (13a) opens into the first spray guiding groove (15a) and the first spray guiding groove (15a) extends from said first outlet (12a) of the liquid feed channel (10) in a direction towards the nose end (2a) of the guide bar body (2) if said at least one first spray outlet orifice (13a) faces the nose end (2a) or in a direction towards the rear end (2b) of the guide bar body (2) if said at least one first spray outlet orifice (13a) faces the rear end (2b).
2. A saw chain guide bar according to claim 1, **characterized**
- **that** said at least one first spray outlet orifice (13a) faces the nose end (2a) of the guide bar body (2);
 - **that** the liquid feed channel (10) at its downstream end (10b) also has a second outlet (12b) with at least one second spray outlet orifice (13b) facing the rear end (2b) of the guide bar body (2), wherein this second outlet (12b) is in fluid communication with the inlet opening (11) and configured to emit liquid received therefrom as a liquid spray through said at least one second spray outlet orifice (13b) in a direction towards the rear end (2b) of the guide bar body (2);
- and
- **that** the guide bar body (2) is provided with a second spray guiding groove (15b) formed as an outwardly open elongated recess in the first side face (5a) of the guide bar body (2), wherein said at least one second spray outlet orifice (13b) opens into the second spray guiding groove (15b) and the second spray guiding groove (15b) extends from said second outlet (12b) of the liquid feed channel (10) in a direction towards the rear end (2b) of the guide bar body (2).
3. A saw chain guide bar according to claim 2, **characterized in that** the first and second outlets (12a, 12b) are located opposite to each other on opposite sides of the liquid feed channel (10).
4. A saw chain guide bar according to claim 2 or 3, **characterized in that** the first outlet (12a) has one single first spray outlet orifice (13a) and that the second outlet (12b) has one single second spray outlet orifice (13b).
5. A saw chain guide bar according to claim 4, **characterized in that** the first spray outlet orifice (13a) and the second spray outlet orifice (13b) are aligned with each other.
6. A saw chain guide bar according to any of claims 2-5, **characterized in that** each one of the first and second spray guiding grooves (15a, 15b) has a length of 80-200 mm and a width of 6-10 mm.
7. A saw chain guide bar according to any of claims 1-6, **characterized in that** the total cross-sectional area of all spray outlet orifices (13a, 13b) of the liquid feed channel (10) is smaller than the cross-sectional area of the inlet opening (11) of the liquid feed channel (10).
8. A saw chain guide bar according to any of claims 1-7, **characterized in that** each spray guiding groove (15a, 15b) extends in a straight line, or at least essentially straight line, along a part of the first side face (5a) of the guide bar body (2).
9. A saw chain guide bar according to claim 8 in combination with any of claims 2-6, **characterized in that** the first and second spray guiding grooves (15a, 15b) are aligned with each other.
10. A saw chain guide bar according to any of claims 1-9, **characterized in that** each spray guiding groove (15a, 15b) has an inclined bottom surface (16), which has such an inclination that the depth (d) of the spray guiding groove (15a, 15b) is gradually decreasing as seen in a direction from a first end (17a) of the spray guiding groove (15a, 15b) facing the associated out-

let (12a, 12b) of the liquid feed channel (10) to an opposite second end (17b) of the spray guiding groove (15a, 15b).

11. A saw chain guide bar according to any of claims 1-10, **characterized in that** the liquid feed channel (10) comprises:

- a straight, or at least essentially straight, first part (18a) that extends from the attachment section (3) of the guide bar body (2) to a middle section (9) of the guide bar body (2) located at the middle of the guide bar body (2) as seen in the longitudinal direction thereof, this first part (18a) being free from spray outlet orifices;
- a straight, or at least essentially straight, second part (18b) that extends at an angle of 80-100°, preferably 90°, to the first part (18a), said spray outlet orifice or orifices (13a, 13b) being provided in this second part (18b); and
- a curved third part (18c) that forms a connection between said first part (18a) and said second part (18b), this third part (18c) being free from spray outlet orifices.

12. A saw chain guide bar according to any of claims 1-11, **characterized in that** the liquid feed channel (10) is formed by an elongated tube (19), which is mounted in an elongated tube-accommodating groove (20) in the first side face (5a) of the guide bar body (2).

13. A saw chain guide bar according to claim 12, **characterized in that** a bottom surface (22) of the tube-accommodating groove (20) has:

- an inclined first ramp section (23a) at a first end (20a) of the tube-accommodating groove (20), wherein this first ramp section (23a) has such an inclination that the depth of the tube-accommodating groove (20) is gradually increasing as seen in a direction from a first end of the first ramp section (23a) facing the first end (20a) of the tube-accommodating groove (20) to an opposite second end of the first ramp section (23a); and
- an inclined second ramp section (23b) at a second end (20b) of the tube-accommodating groove (20), wherein this second ramp section (23b) has such an inclination that the depth of the tube-accommodating groove (20) is gradually increasing as seen in a direction from a first end of the second ramp section (23b) facing the second end (20b) of the tube-accommodating groove (20) to an opposite second end of the second ramp section (23b).

14. A saw chain guide bar according to any of claims

1-13,
characterized

in:

- **that** the saw chain guide bar (1) comprises an additional liquid feed channel (10'), which extends along a part of the guide bar body (2) from the attachment section (3) towards the nose end (2a), the additional liquid feed channel (10') having an upstream end (10a) located at the attachment section (3) and a downstream end (10b) located at a distance from the attachment section (3), wherein the additional liquid feed channel (10') at its upstream end (10a) has an inlet opening (11), through which the additional liquid feed channel (10') is configured to receive pressurized liquid;

- **that** the additional liquid feed channel (10') at its downstream end (10b) has a first outlet (12a) with at least one first spray outlet orifice (13a) facing the nose end (2a) of the guide bar body (2) and a second outlet (12b) with at least one second spray outlet orifice (13b) facing the rear end (2b) of the guide bar body (2), wherein the first outlet (12a) of the additional liquid feed channel (10') is in fluid communication with the inlet opening (11) of the additional liquid feed channel (10') and configured to emit liquid received therefrom as a liquid spray through said at least one first spray outlet orifice (13a) in a direction towards the nose end (2a) of the guide bar body (2), and wherein the second outlet (12b) of the additional liquid feed channel (10') is in fluid communication with the inlet opening (11) of the additional liquid feed channel (10') and configured to emit liquid received therefrom as a liquid spray through said at least one second spray outlet orifice (13b) in a direction towards the rear end (2b) of the guide bar body (2);

- **that** the guide bar body (2) is provided with a third spray guiding groove (15c) formed as an outwardly open elongated recess in the second side face (5b) of the guide bar body (2), wherein said at least one first spray outlet orifice (13a) of the additional liquid feed channel (10') opens into the third spray guiding groove (15c) and the third spray guiding groove (15c) extends from the first outlet (12a) of the additional liquid feed channel (10') in a direction towards the nose end (2a) of the guide bar body (2); and

- **that** the guide bar body (2) is provided with a fourth spray guiding groove (15d) formed as an outwardly open elongated recess in the second side face (5b) of the guide bar body (2), wherein said at least one second spray outlet orifice (13b) of the additional liquid feed channel (10') opens into the fourth spray guiding groove (15d) and the fourth spray guiding groove (15d) extends from the second outlet (12b) of the addi-

tional liquid feed channel (10') in a direction towards the rear end (2b) of the guide bar body (2).

15. A saw chain guide bar according to any of claims 1-14, **characterized in that** the saw chain guide bar (1) has 180° rotational symmetry about a longitudinal centre axis (25) of the guide bar body (2).

Patentansprüche

1. Führungsschiene für eine Sägekette, die Folgendes aufweist:

- einen länglichen Führungsschienenkörper (2), der ein hinteres Ende (2b) und ein gegenüberliegendes vorderes Ende (2a) aufweist, wobei der Führungsschienenkörper (2) an seinem hinteren Ende (2b) einen Befestigungsabschnitt (3) aufweist, der derart ausgebildet ist, dass er an einer Kettensägen-Schneidvorrichtung einer Baumerntemaschine angebracht werden kann, und wobei der Führungsschienenkörper (2) eine erste Seitenfläche (5a), die sich zwischen dem hinteren Ende (2b) und dem vorderen Ende (2a) erstreckt, und eine gegenüberliegende zweite Seitenfläche (5b) aufweist, die sich zwischen dem hinteren Ende (2b) und dem vorderen Ende (2a) erstreckt und

- einen Flüssigkeitszufuhrkanal (10), der sich entlang eines Teils des Führungsschienenkörpers (2) von dem Befestigungsabschnitt (3) in Richtung des vorderen Endes (2a) erstreckt, wobei der Flüssigkeitszufuhrkanal (10) ein stromaufwärts gelegenes Ende (10a), das sich am Befestigungsabschnitt (3) befindet, und ein stromabwärts gelegenes Ende (10b), das sich beabstandet vom Befestigungsabschnitt (3) befindet, aufweist, wobei der Flüssigkeitszufuhrkanal (10) an seinem stromaufwärts seitigen Ende (10a) eine Einlassöffnung (11) aufweist, durch die der Flüssigkeitszufuhrkanal (10) derart ausgebildet ist, dass er unter Druck stehende Flüssigkeit aufnimmt,

dadurch gekennzeichnet,

- **dass** der Flüssigkeitszufuhrkanal (10) an seinem stromabwärts seitigen Ende (10b) einen ersten Auslass (12a) mit mindestens einer ersten Sprühauslassöffnung (13a) aufweist, die dem vorderen Ende (2a) oder dem hinteren Ende (2b) des Führungsschienenkörpers (2) zugewandt ist, wobei dieser erste Auslass (12a) in Fluidverbindung mit der Einlassöffnung (11) steht und derart ausgebildet ist, dass er von dort aufgenommene Flüssigkeit als Flüssigkeitsspray durch die mindestens eine erste Sprühauslassöffnung (13a) in Richtung des vor-

deren Endes (2a) des Führungsschienenkörpers (2) ausgibt, wenn die mindestens eine erste Sprühauslassöffnung (13a) dem vorderen Ende (2a) zugewandt ist, oder in Richtung des hinteren Endes (2b) des Führungsschienenkörpers (2) gerichtet ist, wenn die mindestens eine erste Sprühauslassöffnung (13a) dem hinteren Ende (2b) zugewandt ist; und

- **dass** der Führungsschienenkörper (2) mit einer ersten Führungsnut (15a) für Sprühnebel versehen ist, die als eine nach außen offene längliche Aussparung in der ersten Seitenfläche (5a) des Führungsschienenkörpers (2) ausgebildet ist, wobei die mindestens eine erste Sprühauslassöffnung (13a) in die erste Führungsnut (15a) für Sprühnebel mündet und die erste Führungsnut (15a) für Sprühnebel sich von dem ersten Auslass (12a) des Flüssigkeitszufuhrkanals (10) in Richtung des vorderen Endes (2a) des Führungsschienenkörpers (2) erstreckt, wenn die mindestens eine erste Sprühauslassöffnung (13a) dem vorderen Ende (2a) zugewandt ist, oder in einer Richtung zum hinteren Ende (2b) des Führungsschienenkörpers (2) zeigt, wenn die mindestens eine erste Sprühauslassöffnung (13a) zum hinteren Ende (2b) zeigt.

2. Führungsschiene für eine Sägekette nach Anspruch 1, **dadurch gekennzeichnet:**

- **dass** mindestens eine erste Sprühdüsenöffnung (13a) dem vorderen Ende (2a) des Führungsschienenkörpers (2) zugewandt ist;

- **dass** der Flüssigkeitszufuhrkanal (10) an seinem stromabwärts seitigen Ende (10b) auch einen zweiten Auslass (12b) mit mindestens einer zweiten Sprühauslassöffnung (13b) aufweist, die dem hinteren Ende (2b) des Führungsschienenkörpers (2) zugewandt ist, wobei dieser zweite Auslass (12b) in Fluidverbindung mit der Einlassöffnung (11) steht und derart ausgebildet ist, dass er von dort aufgenommene Flüssigkeit als Flüssigkeitssprühnebel durch die mindestens eine zweite Sprühauslassöffnung (13b) in Richtung des hinteren Endes (2b) des Führungsschienenkörpers (2) ausgibt; und

- **dass** der Führungsschienenkörper (2) mit einer zweiten Führungsnut (15b) für Sprühnebel versehen ist, die als eine nach außen offene längliche Aussparung in der ersten Seitenfläche (5a) des Führungsschienenkörpers (2) ausgebildet ist, wobei die mindestens eine zweite Sprühauslassöffnung (13b) in die zweite Führungsnut (15b) für Sprühnebel mündet und die zweite Führungsnut (15b) sich von dem zweiten Auslass (12b) des Flüssigkeitszufuhrkanals

- (10) in Richtung des hinteren Endes (2b) des Führungsschienenkörpers (2) erstreckt.
3. Führungsschiene für eine Sägekette gemäß Anspruch 2, **dadurch gekennzeichnet, dass** der erste und der zweite Auslass (12a, 12b) einander gegenüberliegend auf gegenüberliegenden Seiten des Flüssigkeitszufuhrkanals (10) angeordnet sind. 5
 4. Führungsschiene für eine Sägekette nach Anspruch 2 oder 3, **dadurch gekennzeichnet, dass** der erste Auslass (12a) eine einzige erste Sprühauslassöffnung (13a) aufweist und dass der zweite Auslass (12b) eine einzige zweite Sprühauslassöffnung (13b) aufweist. 10 15
 5. Führungsschiene für eine Sägekette nach Anspruch 4, **dadurch gekennzeichnet, dass** die erste Sprühauslassöffnung (13a) und die zweite Sprühauslassöffnung (13b) zueinander fluchtend ausgerichtet sind. 20
 6. Führungsschiene für eine Sägekette gemäß mindestens einem der Ansprüche 2 bis 5, **dadurch gekennzeichnet, dass** jede der ersten und zweiten Führungsnuten (15a, 15b) für Sprühnebel eine Länge von 80 bis 200 mm und eine Breite von 6 bis 10 mm aufweist. 25
 7. Führungsschiene für eine Sägekette nach mindestens einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die Gesamtquerschnittsfläche aller Sprühauslassöffnungen (13a, 13b) des Flüssigkeitszufuhrkanals (10) kleiner ist als die Querschnittsfläche der Einlassöffnung (11) des Flüssigkeitszufuhrkanals (10). 30 35
 8. Führungsschiene für eine Sägekette nach mindestens einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** sich jede Führungsnut (15a, 15b) für Sprühnebel in einer geraden Linie oder zumindest im Wesentlichen in einer geraden Linie entlang eines Teils der ersten Seitenfläche (5a) des Führungsschienenkörpers (2) erstreckt. 40 45
 9. Führungsschiene für eine Sägekette nach Anspruch 8 in Kombination mit mindestens einem der Ansprüche 2 bis 6, **dadurch gekennzeichnet, dass** die erste und die zweite Führungsnut (15a, 15b) für Sprühnebel fluchtend zueinander ausgerichtet sind. 50
 10. Führungsschiene für eine Sägekette nach mindestens einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** jede Führungsnut (15a, 15b) für Sprühnebel eine schräge Bodenfläche (16) aufweist, wobei die Schräge derart ausgebildet ist, dass die Tiefe (d) der Führungsnut (15a, 15b) für Sprühnebel kontinuierlich abnimmt, in einer Richtung von einem ersten Ende (17a) der Führungsnut (15a, 15b) für Sprühnebel, das dem zugehörigen Auslass (12a, 12b) des Flüssigkeitszufuhrkanals (10) zugewandt ist, zu einem gegenüberliegenden zweiten Ende (17b) der Führungsnut (15a, 15b) für Sprühnebel gesehen. 55
 11. Führungsschiene für eine Sägekette nach mindestens einem der Ansprüche 1 bis 10, **dadurch gekennzeichnet, dass** der Flüssigkeitszufuhrkanal (10) folgendes aufweist:
 - ein gerades oder zumindest im Wesentlichen gerades erstes Teil (18a), das sich vom Befestigungsabschnitt (3) des Führungsschienenkörpers (2) zu einem Mittelabschnitt (9) des Führungsschienenkörpers (2) erstreckt, der sich in Längsrichtung des Führungsschienenkörpers (2) in der Mitte desselben befindet, wobei dieser erste Teil (18a) keine Sprühauslassöffnungen aufweist;
 - ein gerades oder zumindest im Wesentlichen gerades zweites Teil (18b), das sich in einem Winkel von 80 bis 100°, vorzugsweise 90°, zum ersten Teil (18a) erstreckt, wobei die Sprühauslassöffnung oder -öffnungen (13a, 13b) in diesem zweiten Teil (18b) angeordnet sind; und
 - ein gekrümmtes drittes Teil (18c), das eine Verbindung zwischen dem ersten Teil (18a) und dem zweiten Teil (18b) ausbildet, wobei dieses dritte Teil (18c) frei von Sprühauslassöffnungen ist.
 12. Führungsschiene für eine Sägekette nach mindestens einem der Ansprüche 1 bis 11, **dadurch gekennzeichnet, dass** der Flüssigkeitszufuhrkanal (10) durch ein längliches Rohr (19) ausgebildet ist, das in einer Aufnahmenut (20) für längliche Rohre in der ersten Seitenfläche (5a) des Führungsschienenkörpers (2) montiert ist.
 13. Führungsschiene für eine Sägekette gemäß Anspruch 12, **dadurch gekennzeichnet, dass** eine Bodenfläche (22) der Aufnahmenut (20) für das Rohr folgendes aufweist:
 - einen geeigneten ersten Rampenabschnitt (23a) an einem ersten Ende (20a) der Aufnahmenut (20) für das Rohr, wobei dieser erste Rampenabschnitt (23a) eine derartige Neigung aufweist, dass die Tiefe der Aufnahmenut (20) für das Rohr kontinuierlich erhöht wird, in eine Richtung von einem ersten Ende des ersten Rampenabschnitts (23a), das dem ersten Ende (20a) der Aufnahmenut (20) für das Rohr zugewandt ist, zu einem gegenüberliegenden zweiten Ende des ersten Rampenabschnitts (23a) gesehen; und

- einen geneigten zweiten Rampenabschnitt (23b) an einem zweiten Ende (20b) der Aufnahmenut (20) für das Rohr, wobei dieser zweite Rampenabschnitt (23b) eine derartige Neigung aufweist, dass die Tiefe der Aufnahmenut (20) für das Rohr kontinuierlich erhöht wird, in einer Richtung von einem ersten Ende des zweiten Rampenabschnitts (23b), das dem zweiten Ende (20b) der Aufnahmenut (20) für das Rohr zugewandt ist, zu einem gegenüberliegenden zweiten Ende des zweiten Rampenabschnitts (23b) gesehen.

14. Führungsschiene für eine Sägekette nach mindestens einem der Ansprüche 1 bis 13, dadurch gekennzeichnet:

- **dass** die Führungsschiene (1) der Sägekette einen zusätzlichen Flüssigkeitszufuhrkanal (10') aufweist, der sich entlang eines Teils des Führungsschienenkörpers (2) vom Befestigungsabschnitt (3) zum vorderen Ende (2a) erstreckt, wobei der zusätzliche Flüssigkeitszufuhrkanal (10') ein stromaufwärts gelegenes Ende (10a) am Befestigungsabschnitt (3) und ein stromabwärts gelegenes Ende (10b) beabstandet vom Befestigungsabschnitt (3) aufweist, wobei der zusätzliche Flüssigkeitszufuhrkanal (10') an seinem stromaufwärts seitigen Ende (10a) eine Einlassöffnung (11) aufweist, durch die der zusätzliche Flüssigkeitszufuhrkanal (10') derart ausgebildet ist, dass er unter Druck stehende Flüssigkeit aufnimmt;

- **dass** der zusätzliche Flüssigkeitszufuhrkanal (10') an seinem stromabwärts seitigen Ende (10b) einen ersten Auslass (12a) mit mindestens einer ersten Sprühauslassöffnung (13a), die dem vorderen Ende (2a) des Führungsschienenkörpers (2) zugewandt ist, und einen zweiten Auslass (12b) mit mindestens einer zweiten Sprühauslassöffnung (13b), die dem hinteren Ende (2b) des Führungsschienenkörpers (2) zugewandt ist, aufweist, wobei der erste Auslass (12a) des zusätzlichen Flüssigkeitszufuhrkanals (10') in Fluidverbindung mit der Einlassöffnung (11) des zusätzlichen Flüssigkeitszufuhrkanals (10') steht und derart ausgebildet ist, dass er von dort aufgenommene Flüssigkeit als Flüssigkeitssprühnebel durch die mindestens eine erste Sprühauslassöffnung (13a) in Richtung des vorderen Endes (2a) des Führungsschienenkörpers (2) ausgibt, und wobei der zweite Auslass (12b) des zusätzlichen Flüssigkeitszufuhrkanals (10') in Fluidverbindung mit der Einlassöffnung (11) des zusätzlichen Flüssigkeitszufuhrkanals (10') steht und derart ausgebildet ist, dass er die von dort aufgenommene Flüssigkeit als Flüssigkeitssprühnebel

durch die mindestens eine zweite Sprühauslassöffnung (13b) in Richtung des hinteren Endes (2b) des Führungsschienenkörpers (2) ausgibt;

- **dass** der Führungsschienenkörper (2) mit einer dritten Führungsnut (15c) für Sprühnebel versehen ist, die als eine nach außen offene längliche Aussparung in der zweiten Seitenfläche (5b) des Führungsschienenkörpers (2) ausgebildet ist, wobei die mindestens eine erste Sprühauslassöffnung (13a) des zusätzlichen Flüssigkeitszufuhrkanals (10') in die dritte Führungsnut (15c) für Sprühnebel mündet und die dritte Führungsnut (15c) für Sprühnebel sich vom ersten Auslass (12a) des zusätzlichen Flüssigkeitszufuhrkanals (10') in Richtung des vorderen Endes (2a) des Führungsschienenkörpers (2) erstreckt; und

- **dass** der Führungsschienenkörper (2) mit einer vierten Führungsnut (15d) für Sprühnebel versehen ist, die als eine nach außen offene längliche Aussparung in der zweiten Seitenfläche (5b) des Führungsschienenkörpers (2) ausgebildet ist, wobei die mindestens eine zweite Sprühauslassöffnung (13b) des zusätzlichen Flüssigkeitszufuhrkanals (10') in die vierte Führungsnut (15d) für Sprühnebel mündet und die vierte Führungsnut (15d) für Sprühnebel sich vom zweiten Auslass (12b) des zusätzlichen Flüssigkeitszufuhrkanals (10') in Richtung des hinteren Endes (2b) des Führungsschienenkörpers (2) erstreckt.

15. Führungsschiene für eine Sägekette nach einem der Ansprüche 1 bis 14, dadurch gekennzeichnet, dass die Führungsschiene (1) für eine Sägekette um 180° rotationssymmetrisch um eine längs verlaufende Mittelachse (25) des Führungsschienenkörpers (2) ausgebildet ist.

Revendications

1. Barre de guidage de chaîne de scie comprenant :

- un corps de barre de guidage allongé (2), qui a une extrémité arrière (2b) et une extrémité de nez opposée (2a), dans laquelle le corps de barre de guidage (2) à son extrémité arrière (2b) a une section de fixation (3) configurée pour être fixée à un dispositif de coupe de scie à chaîne d'une abatteuse-ébrancheuse et dans laquelle le corps de barre de guidage (2) a une première face latérale (5a) s'étendant entre l'extrémité arrière (2b) et l'extrémité de nez (2a) et une deuxième face latérale (5b) opposée s'étendant entre l'extrémité arrière (2b) et l'extrémité de nez (2a) ; et

- un canal d'alimentation en liquide (10) s'étendant le long d'une partie du corps de barre de guidage (2) depuis la section de fixation (3) vers l'extrémité de nez (2a), le canal d'alimentation en liquide (10) ayant une extrémité amont (10a) située au niveau de la section de fixation (3) et une extrémité aval (10b) située à une distance de la section de fixation (3), dans laquelle le canal d'alimentation en liquide (10) à son extrémité amont (10a) a une ouverture d'entrée (11), à travers lequel le canal d'alimentation en liquide (10) est configuré pour recevoir du liquide sous pression,

caractérisée en ce que :

- le canal d'alimentation en liquide (10) au niveau de son extrémité aval (10b) a une première sortie (12a) avec au moins un premier orifice de sortie de pulvérisation (13a) faisant face à l'extrémité de nez (2a) ou à l'extrémité arrière (2b) du corps de barre de guidage (2), dans laquelle cette première sortie (12a) est en communication fluïdique avec l'ouverture d'entrée (11) et configurée pour émettre un liquide reçu de celle-ci sous forme de pulvérisation de liquide à travers ledit au moins un premier orifice de sortie de pulvérisation (13a) dans une direction vers l'extrémité de nez (2a) du corps de barre de guidage (2) si ledit au moins un premier orifice de sortie de pulvérisation (13a) fait face à l'extrémité de nez (2a) ou dans une direction vers l'extrémité arrière (2b) du corps de barre de guidage (2) si ledit au moins un premier orifice de sortie de pulvérisation (13a) fait face à l'extrémité arrière (2b) ; et

- le corps de barre de guidage (2) est muni d'une première rainure de guidage de pulvérisation (15a) formée comme un évidement allongé ouvert vers l'extérieur dans la première face latérale (5a) du corps de barre de guidage (2), dans laquelle ledit au moins un premier orifice de sortie de pulvérisation (13a) débouche dans la première rainure de guidage de pulvérisation (15a) et la première rainure de guidage de pulvérisation (15a) s'étend depuis ladite première sortie (12a) du canal d'alimentation en liquide (10) dans une direction vers l'extrémité de nez (2a) du corps de barre de guidage (2) si ledit au moins un premier orifice de sortie de pulvérisation (13a) fait face à l'extrémité de nez (2a) ou dans une direction vers l'extrémité arrière (2b) du corps de barre de guidage (2) si ledit au moins un premier orifice de sortie de pulvérisation (13a) fait face à l'extrémité arrière (2b).

2. Barre de guidage de chaîne de scie selon la revendication 1, **caractérisée en ce que** :

- ledit au moins un premier orifice de sortie de pulvérisation (13a) fait face à l'extrémité de nez (2a) du corps de barre de guidage (2) ;

- le canal d'alimentation en liquide (10) à son extrémité aval (10b) possède également une deuxième sortie (12b) avec au moins un deuxième orifice de sortie de pulvérisation (13b) faisant face à l'extrémité arrière (2b) du corps de barre de guidage (2), dans laquelle cette deuxième sortie (12b) est en communication fluïdique avec l'ouverture d'entrée (11) et configurée pour émettre du liquide reçu à partir de celle-ci comme une pulvérisation de liquide à travers ledit au moins un deuxième orifice de sortie de pulvérisation (13b) dans une direction vers l'extrémité arrière (2b) du corps de barre de guidage (2) ; et

- le corps de barre de guidage (2) est muni d'une deuxième rainure de guidage de pulvérisation (15b) formée comme un évidement allongé ouvert vers l'extérieur dans la première face latérale (5a) du corps de barre de guidage (2), dans laquelle ledit au moins un deuxième orifice de sortie de pulvérisation (13b) débouche dans la deuxième rainure de guidage de pulvérisation (15b) et la deuxième rainure de guidage de pulvérisation (15b) s'étend depuis ladite deuxième sortie (12b) du canal d'alimentation en liquide (10) dans une direction vers l'extrémité arrière (2b) du corps de barre de guidage (2).

3. Barre de guidage de chaîne de scie selon la revendication 2, **caractérisée en ce que** les première et deuxième sorties (12a, 12b) sont situées l'une opposée à l'autre sur des côtés opposés du canal d'alimentation en liquide (10).

4. Barre de guidage de chaîne de scie selon la revendication 2 ou 3, **caractérisée en ce que** la première sortie (12a) possède un seul premier orifice de sortie de pulvérisation (13a) et **en ce que** la deuxième sortie (12b) possède un seul deuxième orifice de sortie de pulvérisation (13b).

5. Barre de guidage de chaîne de scie selon la revendication 4, **caractérisée en ce que** la première ouverture de sortie de pulvérisation (13a) et la deuxième ouverture de sortie de pulvérisation (13b) sont alignées l'une avec l'autre.

6. Barre de guidage de chaîne de scie selon l'une quelconque des revendications 2 à 5, **caractérisée en ce que** chacune des première et deuxième rainures de guidage de pulvérisation (15a, 15b) a une longueur de 80 à 200 mm et une largeur de 6 à 10 mm.

7. Barre de guidage de chaîne de scie selon l'une

- quelconque des revendications 1 à 6, **caractérisée en ce que** l'aire totale en coupe transversale de tous les orifices de sortie de pulvérisation (13a, 13b) du canal d'alimentation en liquide (10) est inférieure à l'aire en coupe transversale de l'ouverture d'entrée (11) du canal d'alimentation en liquide (10).
8. Barre de guidage de chaîne de scie selon l'une quelconque des revendications 1 à 7, **caractérisée en ce que** chaque rainure de guidage de pulvérisation (15a, 15b) s'étend en ligne droite, ou au moins sensiblement en ligne droite, le long d'une partie de la première face latérale (5a) du corps de barre de guidage (2).
9. Barre de guidage de chaîne de scie selon la revendication 8 en combinaison avec l'une quelconque des revendications 2 à 6, **caractérisée en ce que** les première et deuxième rainures de guidage de pulvérisation (15a, 15b) sont alignées l'une avec l'autre.
10. Barre de guidage de chaîne de scie selon l'une quelconque des revendications 1 à 9, **caractérisée en ce que** chaque rainure de guidage de pulvérisation (15a, 15b) a une surface inférieure inclinée (16), qui a une inclinaison telle que la profondeur (d) de la rainure de guidage de pulvérisation (15a, 15b) diminue progressivement, vue dans une direction allant d'une première extrémité (17a) de la rainure de guidage de pulvérisation (15a, 15b) faisant face à la sortie associée (12a, 12b) du canal d'alimentation en liquide (10) vers une deuxième extrémité (17b) opposée de la rainure de guidage de liquide (15a, 15b).
11. Barre de guidage de chaîne de scie selon l'une quelconque des revendications 1 à 10, **caractérisée en ce que** le canal d'alimentation en liquide (10) comprend :
- une première partie droite, ou au moins essentiellement droite, (18a) qui s'étend depuis la section de fixation (3) du corps de barre de guidage (2) jusqu'à une section médiane (9) du corps de barre de guidage (2) située au milieu du corps de barre de guidage (2) comme vu dans la direction longitudinale de celui-ci, cette première partie (18a) étant exempte d'orifices de sortie de pulvérisation ;
 - une deuxième partie droite, ou au moins essentiellement droite (18b) qui s'étend selon un angle de 80-100°, de préférence 90°, par rapport à la première partie (18a), ledit ou lesdits orifices de sortie de pulvérisation (13a, 13b) étant prévus dans cette deuxième partie (18b) ; et
 - une troisième partie incurvée (18c) qui forme un raccordement entre ladite première partie (18a) et ladite deuxième partie (18b), cette troisième partie (18c) étant exempte d'orifices de sortie de pulvérisation.
12. Barre de guidage de chaîne de scie selon l'une quelconque des revendications 1 à 11, **caractérisée en ce que** le canal d'alimentation en liquide (10) est formé par un tube allongé (19), qui est monté dans une rainure de réception de tube allongée (20) dans la première face latérale (5a) du corps de barre de guidage (2).
13. Barre de guidage de chaîne de scie selon la revendication 12, **caractérisée en ce que** une surface inférieure (22) de la rainure de réception de tube (20) possède :
- une première section de rampe inclinée (23a) au niveau d'une première extrémité (20a) de la rainure de réception de tube (20), dans laquelle cette première section de rampe (23a) a une inclinaison telle que la profondeur de la rainure de réception de tube (20) augmente progressivement, comme vue dans une direction depuis une première extrémité de la première section de rampe (23a) faisant face à la première extrémité (20a) de la rainure de réception de tube (20) jusqu'à une deuxième extrémité opposée de la première section de rampe (23a) ; et
 - une deuxième section de rampe inclinée (23b) au niveau d'une deuxième extrémité (20b) de la rainure de réception de tube (20), dans laquelle cette deuxième section de rampe (23b) a une inclinaison telle que la profondeur de la rainure de réception de tube (20) augmente progressivement, comme vue dans une direction depuis une première extrémité de la deuxième section de rampe (23b) faisant face à la deuxième extrémité (20b) de la section de réception de tube (20) jusqu'à une deuxième extrémité opposée de la deuxième section de rampe (23b).
14. Barre de guidage de chaîne de scie selon l'une quelconque des revendications 1 à 13, **caractérisée en ce que** :
- la barre de guidage de chaîne de scie (1) comprend un canal d'alimentation en liquide supplémentaire (10'), qui s'étend le long d'une partie du corps de barre de guidage (2) depuis la section de fixation (3) vers l'extrémité de nez (2a), le canal d'alimentation en liquide supplémentaire (10') ayant une extrémité amont (10a) située au niveau de la section de fixation (3) et une extrémité aval (10b) située à une distance de la section de fixation (3), dans laquelle le canal d'alimentation en liquide supplémentaire (10') à son extrémité amont (10a) a une ouverture d'entrée (11), à travers lequel le canal d'a-

limentation en liquide supplémentaire (10') est configuré pour recevoir du liquide sous pression ;

- le canal d'alimentation de liquide supplémentaire (10') à son extrémité aval (10b) a une première sortie (12a) avec au moins un premier orifice de sortie de pulvérisation (13a) faisant face à l'extrémité de nez (2a) du corps de barre de guidage (2) et une deuxième sortie (12b) avec au moins un deuxième orifice de sortie de pulvérisation (13b) faisant face à l'extrémité arrière (2b) du corps de barre de guidage (2), dans laquelle la première sortie (12a) du canal d'alimentation en liquide supplémentaire (10') est en communication fluidique avec l'ouverture d'entrée (11) du canal d'alimentation en liquide supplémentaire (10') et configurée pour émettre du liquide reçu à partir de celui-ci comme une pulvérisation de liquide à travers ledit au moins un premier orifice de sortie de pulvérisation (13a) dans une direction vers l'extrémité de nez (2a) du corps de barre de guidage (2), et dans laquelle la deuxième sortie (12b) du canal d'alimentation en liquide supplémentaire (10') est en communication fluidique avec l'ouverture d'entrée (11) du canal d'alimentation en liquide supplémentaire (10') et configurée pour émettre du liquide reçu à partir de celui-ci comme une pulvérisation de liquide à travers ledit au moins un deuxième orifice de sortie de pulvérisation (13b) dans une direction vers l'extrémité arrière (2b) du corps de barre de guidage (2) ;

- le corps de barre de guidage (2) est muni d'une troisième rainure de guidage de pulvérisation (15c) formée comme un évidement allongé ouvert vers l'extérieur dans la deuxième face latérale (5b) du corps de barre de guidage (2), dans laquelle ledit au moins un premier orifice de sortie de pulvérisation (13a) du canal d'alimentation en liquide supplémentaire (10') débouche dans la troisième rainure de guidage de pulvérisation (15c) et la troisième rainure de guidage de pulvérisation (15c) s'étend depuis la première sortie (12a) du canal d'alimentation en liquide supplémentaire (10') dans une direction vers l'extrémité de nez (2a) du corps de barre de guidage (2) ; et

- le corps de barre de guidage (2) est muni d'une quatrième rainure de guidage de pulvérisation (15d) formée comme un évidement allongé ouvert vers l'extérieur dans la deuxième face latérale (5b) du corps de barre de guidage (2), dans laquelle ledit au moins un deuxième orifice de sortie de pulvérisation (13b) du canal d'alimentation de liquide supplémentaire (10') débouche dans la quatrième rainure de guidage de pulvérisation (15d) et la quatrième rainure de guidage de pulvérisation (15d) s'étend depuis la deu-

xième sortie (12b) du canal d'alimentation de liquide supplémentaire (10') dans une direction vers l'extrémité arrière (2b) du corps de barre de guidage (2).

15. Barre de guidage de chaîne de scie selon l'une quelconque des revendications 1 à 14, **caractérisée en ce que** la barre de guidage de chaîne de scie (1) possède une symétrie de rotation de 180° autour d'un axe central longitudinal (25) du corps de barre de guidage (2).

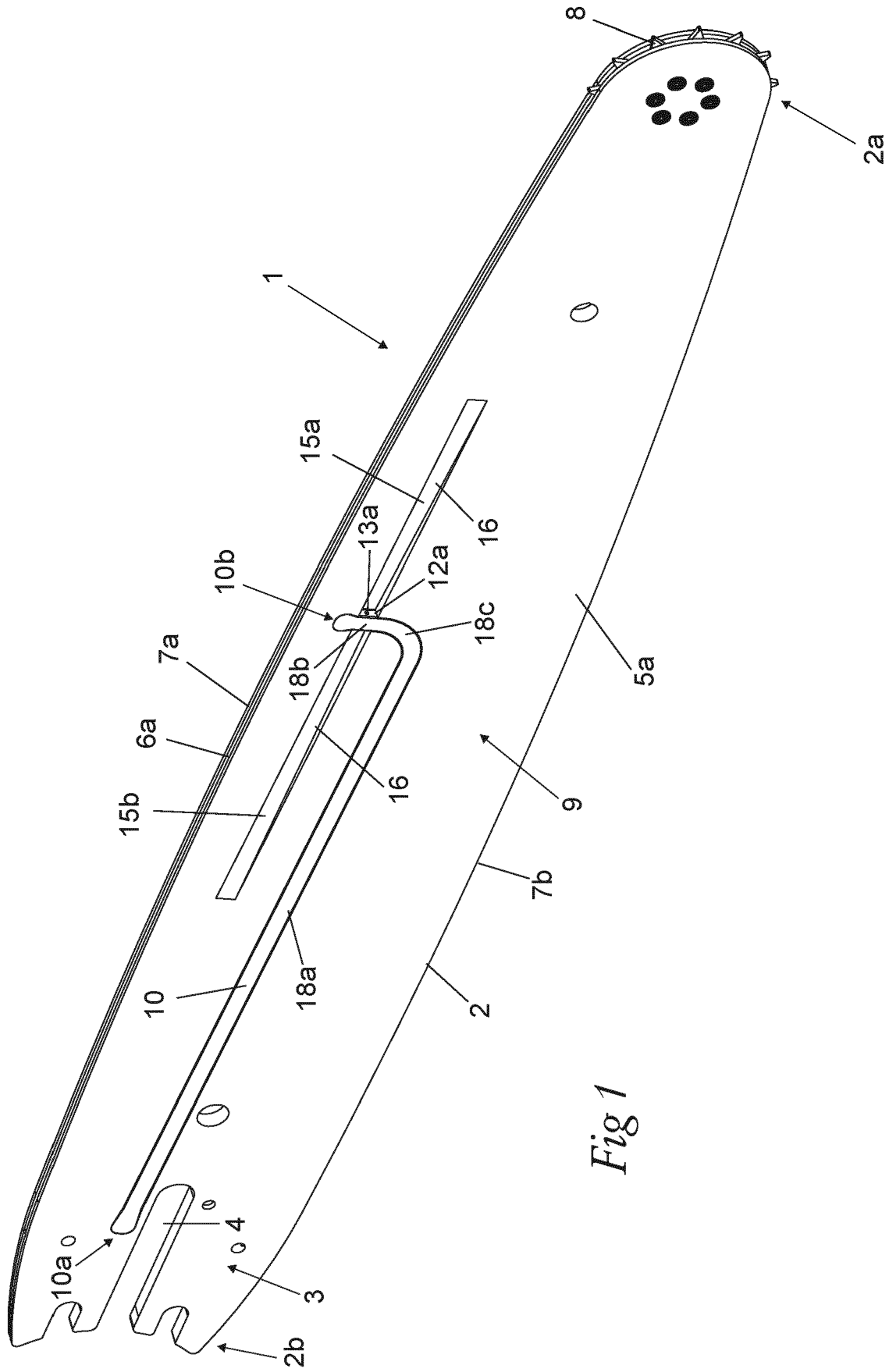


Fig 1

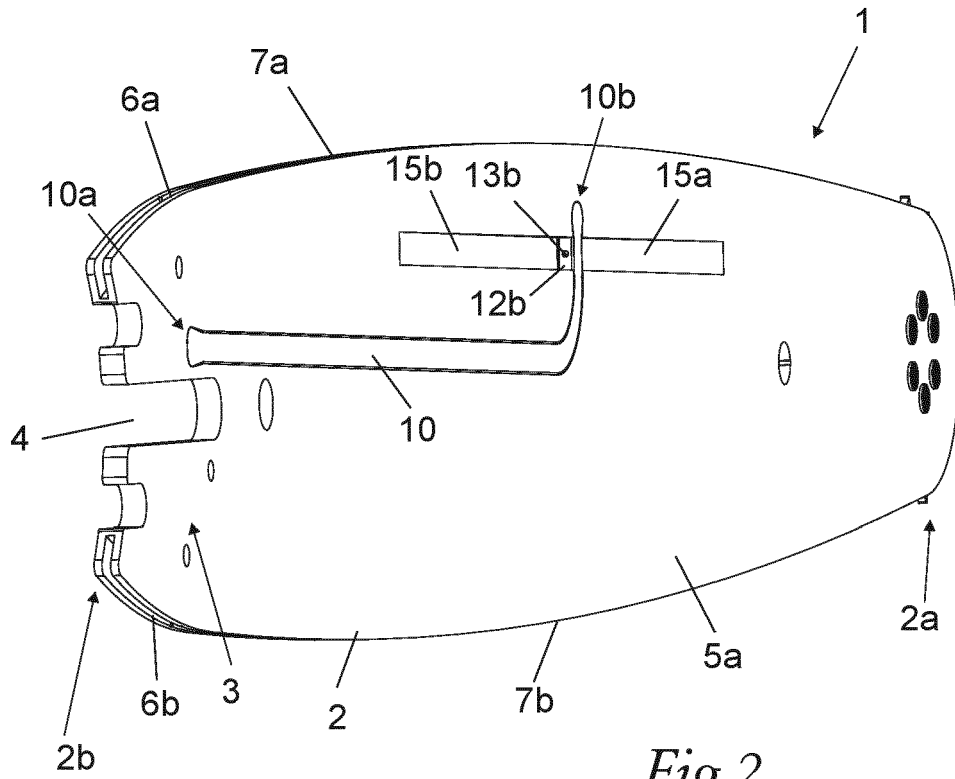


Fig 2

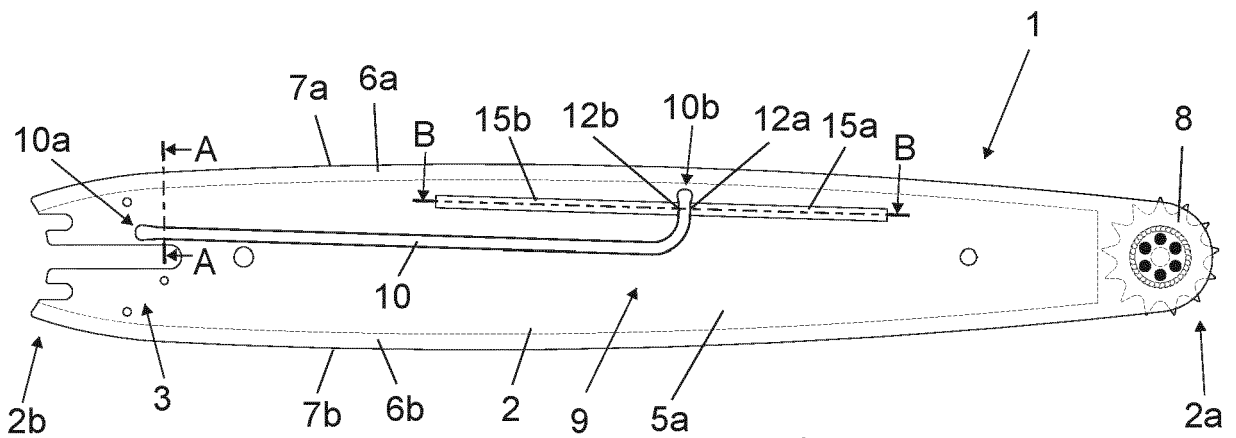
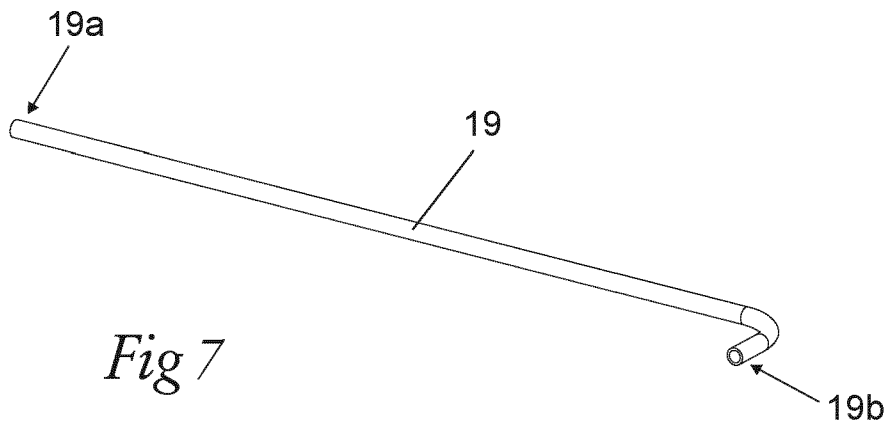
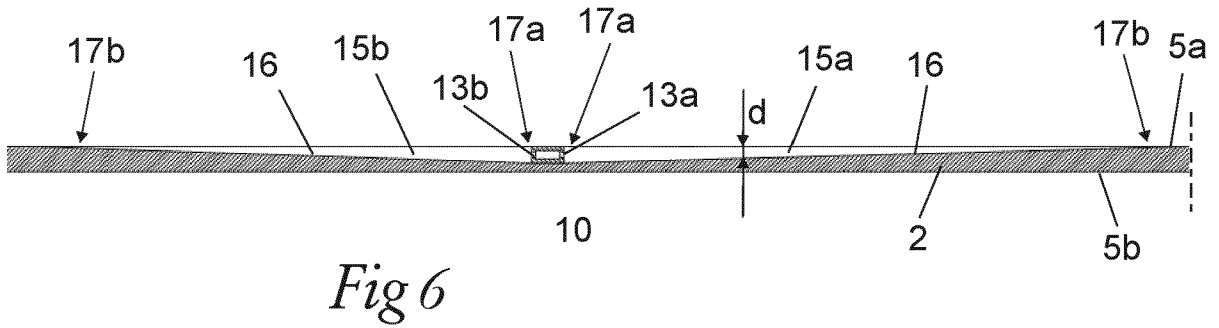
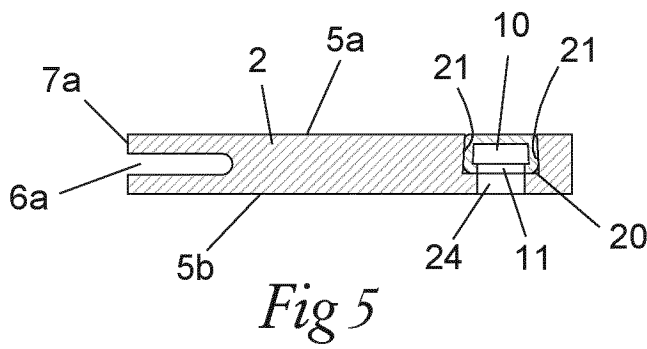
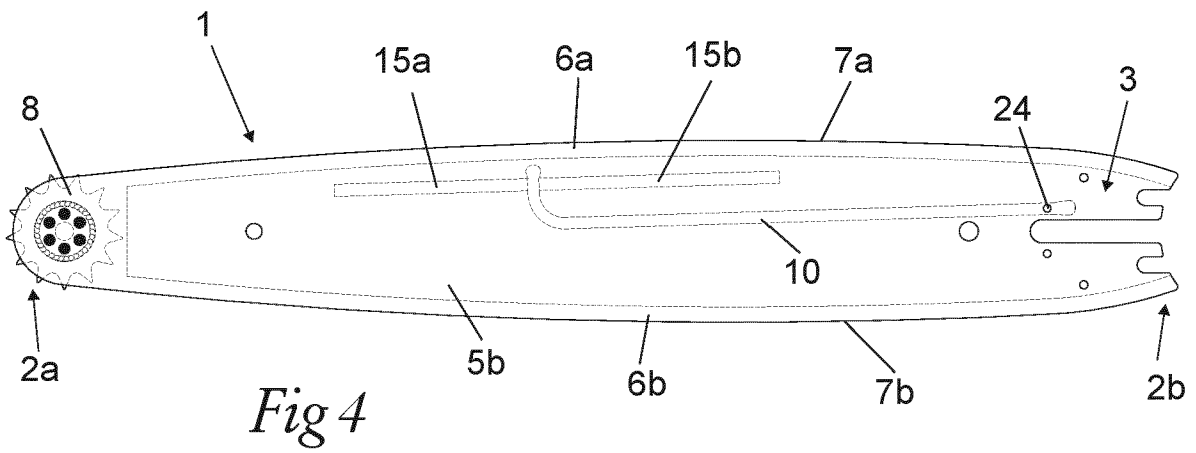


Fig 3



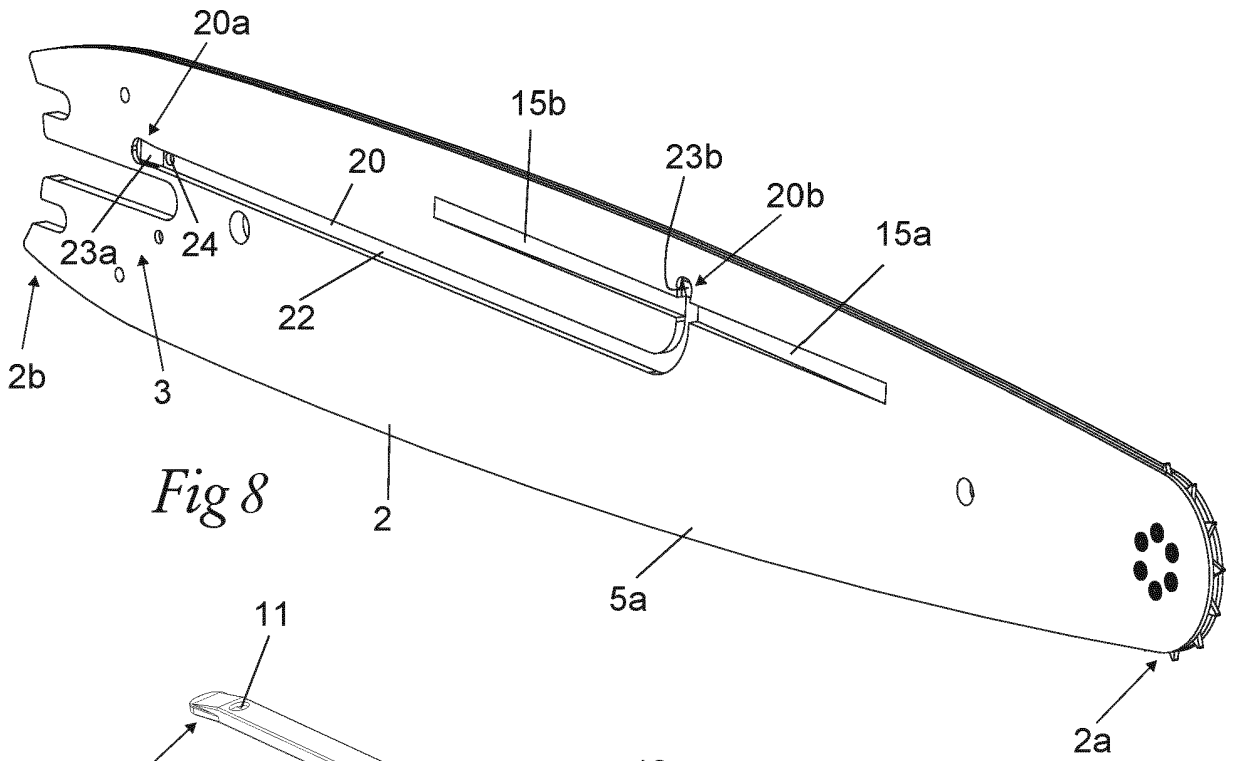


Fig 8

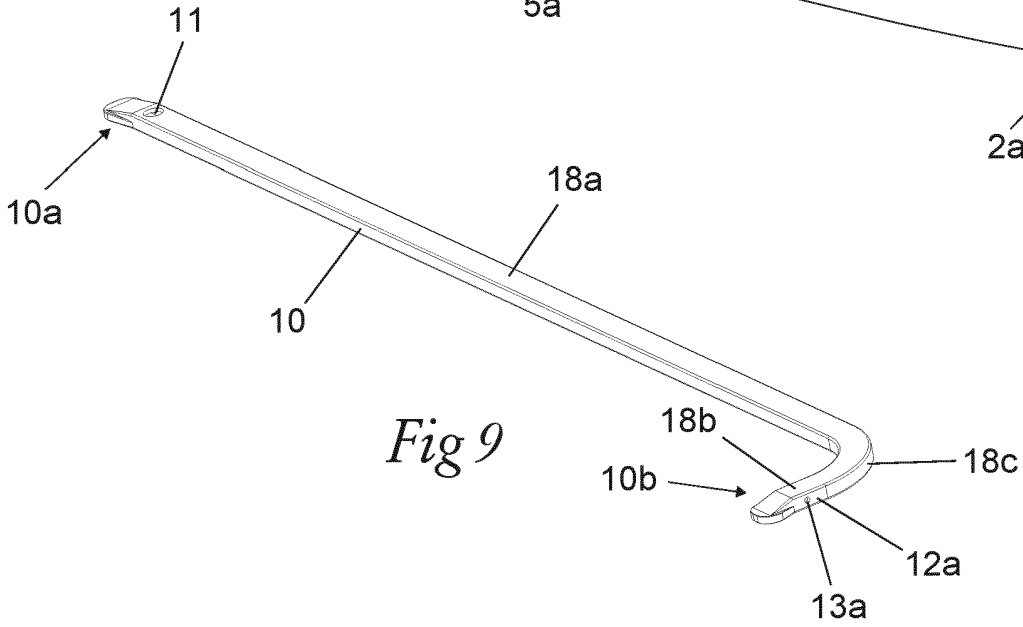


Fig 9

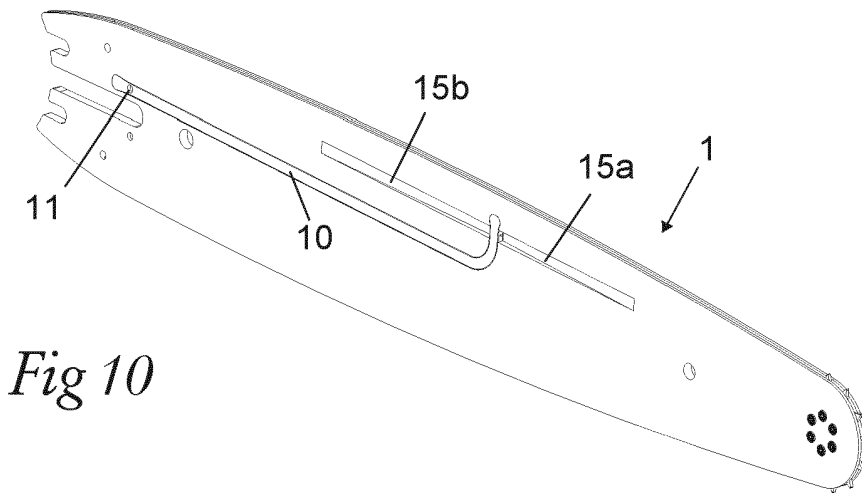
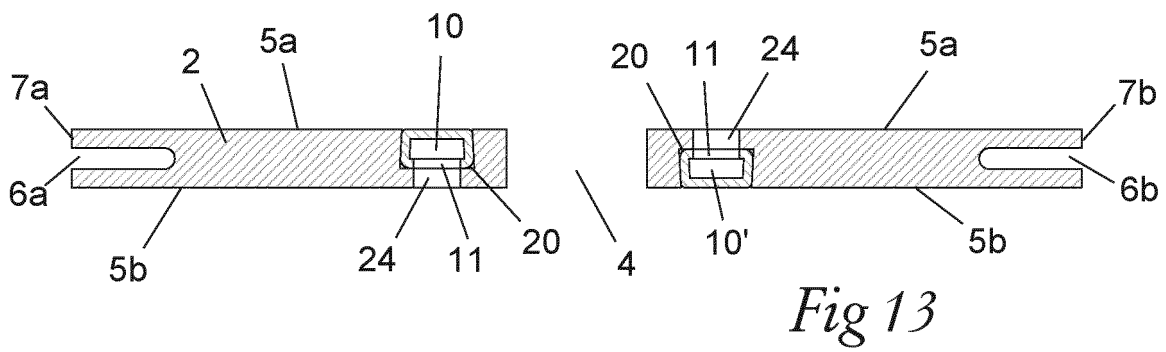
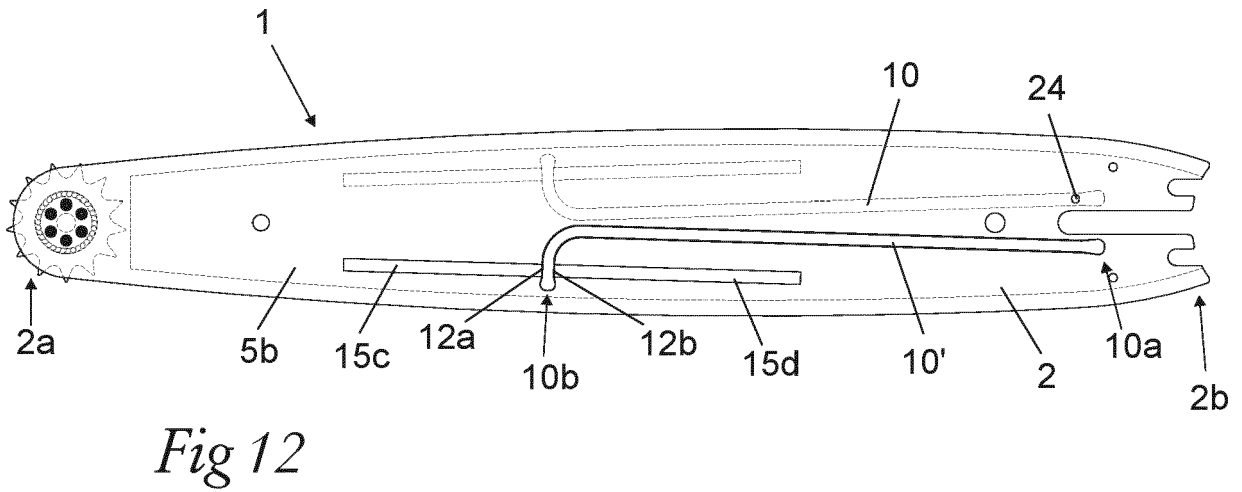
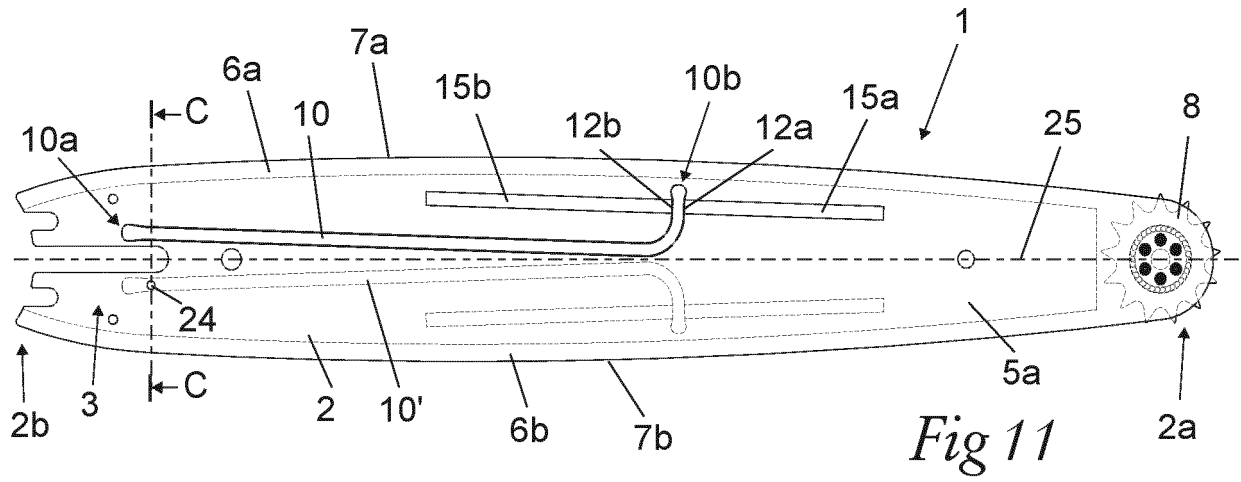


Fig 10



REFERENCES CITED IN THE DESCRIPTION

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