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(54) **Cutting device for branches, shrubs and the like**

(57) A cutting device (1) for branches, shrubs and the like, comprising:

- A cutting chain (2), having a closed-path configuration;
- a track-like shaped guide (3) along which said chain (2) is apt to move slidably;

- a partializing member (10) for the chain (2), slidably associated with the guide (3) and apt to selectively shield, depending on the extent of its own sliding, selected portions of chain (2);
- a top protecting member (21) fastened to the guide (3).

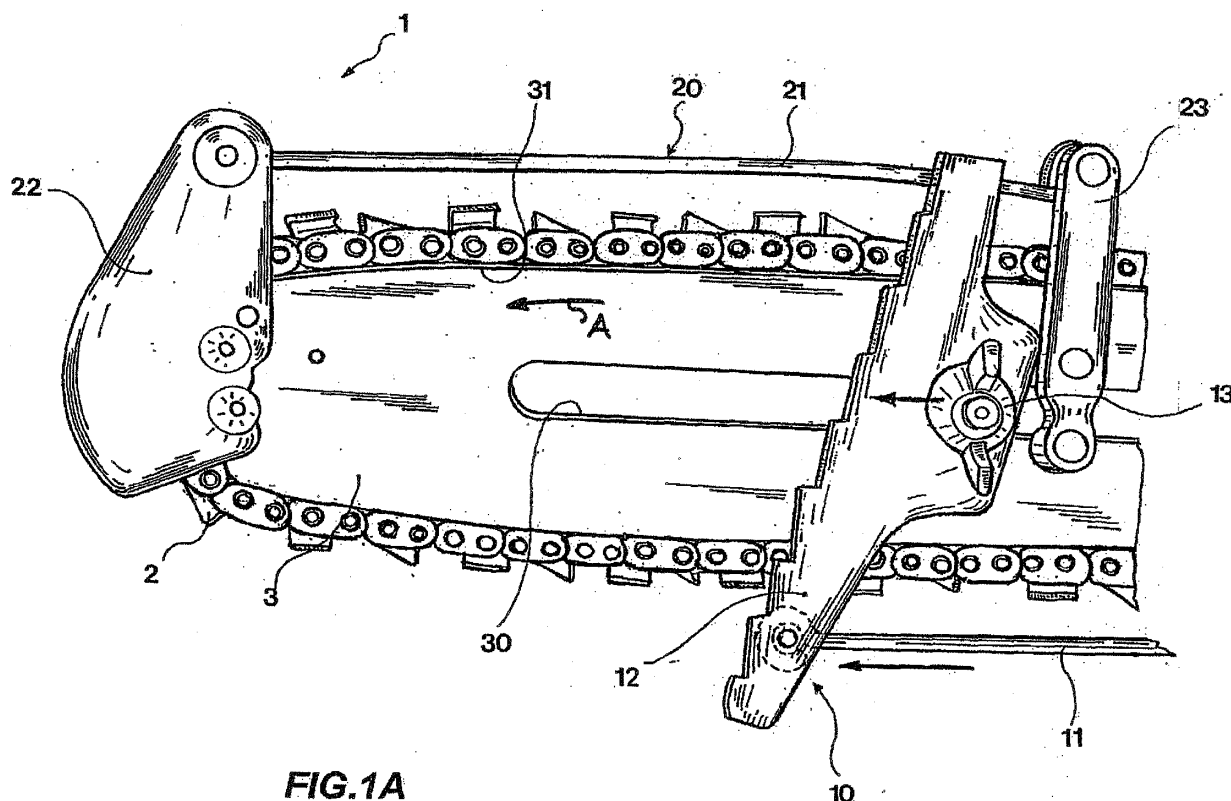


FIG.1A

Description

[0001] The present invention refers to a cutting device for branches, shrubs and the like of the type comprising an annular cutting tool, e.g. a chain, driveable along a corresponding guide, e.g. of rail type.

[0002] Devices for the cutting of branches, shrubs and the like - often used for pruning operations - based on a chain-type annular cutting tool are known. Such devices comprise a guide rail, typically having an ellipsoidal development, for guiding the cutting chain, and are generally connected to a motor to produce the sliding of the chain itself along the above-mentioned rail.

[0003] The devices of the mentioned type are used in a plurality of pruning and cutting applications having different needs, above all with regard to the optimum extension of the effective portion of the cutting tool.

[0004] In general, the same device proves unsuitable to fully meet the cutting needs of such varied applications. This entails that it is necessary to equip oneself with a plurality of different cutting tools, or execute in a less than optimal manner the cutting and pruning operations by a single tool.

[0005] Moreover, known chain cutting devices are unsuitable to cut off small branches, since when so doing the chain portions not engaging the branch to be cut interfere with the other twigs and the surrounding foliage, causing the (undesired) cutting off of the latter as well. This is particularly true since smaller twigs are usually quite near thereamong, at a distance not allowing a safe introduction thereamong of the cutting chain sliding on the guide. therefore, these twigs are often cut with scissors, sometimes pneumatically driven ones.

[0006] Therefore, the technical problem set and solved by the present invention is that of providing a cutting device allowing to overcome the drawbacks mentioned above with reference to the known art.

[0007] Such a problem is solved by a cutting device according to claim 1.

[0008] Preferred features of the invention are set forth in the dependent claims thereof.

[0009] The present invention provides some relevant advantages. The main advantage lies in the fact that, thanks to the option of a selective partializing of the cutting tool, the device optimally adapts to any specific need, exposing only the tool portion actually required and suitable for each specific application.

[0010] Moreover, the device is fitted with a protection, preferably arranged above the cutting tool, shielding the twigs and foliage surrounding the branch to be cut from contact with the cutting chain.

[0011] Other advantages, features and the operation steps of the present invention will be made apparent in the following detailed description of some embodiments thereof, given by way of example and not for limitative purposes. Reference will be made to the figures of the annexed drawings, wherein:

■ Figures 1A, 1B and 1C show each a side view of a preferred embodiment of the cutting device according to the present invention, in a respective position of a partializing member of the cutting chain;

■ Figures 2A and 2B show each a side view of the device of Figure 1A, considered oppositely to said latter Figure, in this case as well in a respective position of a partializing member of the cutting chain.

[0012] Referring to the above Figures, a cutting device for branches, shrubs and the like according to a preferred embodiment of the invention is generally denoted by 1.

[0013] The device 1 comprises a substantially flexible elongated cutting tool 2 having a closed-path configuration, i.e. an annular development, which in the present embodiment is a conventional cutting chain.

[0014] Of course, in use, one or more effective portions of the chain 2 are into contact with the piece to be cut, in order just to carry out its cutting.

[0015] The device 1 further comprises a shaped guide 3 having a main body, peripherally to which a rail 31 is obtained. The guide 3 cooperates with the chain 2 to guide just the cutting motion of the latter, which slides in the rail 31.

[0016] The guide 3 has a substantially ellipsoidal extension in a plan view, and generally a development with a prevalent extension direction A, corresponding to the main sliding direction of the chain 2.

[0017] Typically, the device 1 is permanently or removably associated with an electric saw for pruning trees and shrubs incorporating drive means for the chain 2, apt to slide the latter on the guide 3 so as to impart it a cutting motion. Such an electric saw is known by itself, hence a further description thereof will be omitted.

[0018] According to the invention, the device 1 further comprises means 10 for partializing the chain 2, apt to shield selected portions of the chain itself from contact with the body to be cut, so as to allow a natural adaption of the device to the type and size of the branches to be cut.

[0019] The partializing means comprises a partializing member 11 associated with the guide 3 in a manner such as to continuously slide with respect thereto so as to selectively shield, depending on the extent of its own sliding, selected portions of the chain 2.

[0020] In the present embodiment, the partializing member 11 is a rod of steel or other material having a substantially cylindrical development. Such a member 11 is fixed, at an end thereof, to a runner member 12 slidably coupled to the main body of the guide 3. In the present example such a slidable coupling is made by a portion 121 of said runner member 12 engaging a seat 30 of the body of the guide 3.

[0021] Moreover, locking means 13, clamp-type in the present example, is provided for locking the runner member 12, and therefore the partializing member 11, in a specific shielding position.

[0022] As may be seen in the figures, in the present

embodiment the members 11 and 12 slide substantially along the above-mentioned prevalent development direction A of the guide 3. In such an arrangement, the partializing member 11 is apt to shield bottom portions of the chain 2. Of course, variant embodiments may provide a different arrangement in which the member 11 be apt to shield (also) top or front portions of the chain 2.

[0023] Moreover, variant embodiments may envisage that the elongated member 11 be replaced by a small carter, to provide a more extensive protection.

[0024] The device 1 further comprises protecting means 20, apt to shield from the action of the chain 2 foliage, twigs and the like surrounding the branch to be cut.

[0025] Such protecting means 20 comprises in particular an elongated shielding member 21, it also extending substantially along the above-mentioned prevalent development direction of the guide 3 and fixed to two side flanges 22 and 23, respectively a front one and a rear one, in turn made integral to the body of the guide 3.

[0026] The front flange 22 also shields a corresponding portion of the chain 2 from contact with the shrub.

[0027] Also the elongated member 21 may be in the form of a rod having a substantially cylindrical development. Such an embodiment allows, among other things, the member 21 to cross the cut if need be.

[0028] In the arrangement described, the elongated member 21 is arranged oppositely to the chain 2 with respect to the partializing member 11, and specifically at the entire top portion thereof.

[0029] The present invention has been hereto described with reference to preferred embodiments thereof. It is understood that other embodiments might exist, all falling within the concept of the same invention, as defined by the protective scope of the claims hereinafter.

Claims

1. A cutting device (1) for branches, shrubs and the like, comprising:

- an elongated cutting tool (2), having a closed-path configuration;
- a shaped guide (3) along which said cutting tool (2) is apt to move slidably;
- means (10) for partializing said cutting tool (2), which comprises a partializing member (11) slidably associated with said guide (3) and apt to selectively shield, depending on the extent of its own sliding, selected portions of said cutting tool (2); and
- protecting means (20), apt to shield from said cutting device (2) foliage, twigs and the like surrounding the branch to be cut, which protecting means (20) is fastened to said guide (3) and is arranged oppositely to said cutting tool (2) with respect to said partializing member (11).

2. The cutting device (1) according to claim 1, wherein said guide (3) has a prevalent development direction (A) and said partializing member (11) is slidable substantially along said direction.

3. The cutting device (1) according to claim 1 or 2, wherein the overall arrangement is such that said partializing member (11) is apt to shield top or bottom portions of said cutting tool (2).

4. The cutting device (1) according to any one of the preceding claims, wherein said partializing member comprises an elongated member (11) apt to shield corresponding portions of said cutting tool (2).

5. The cutting device (1) according to the preceding claim, wherein said elongated member (11) has a substantially cylindrical development.

6. The cutting device (1) according to any one of the preceding claims, wherein said partializing means (10) also comprises locking means (13) for locking said partializing means (11) in a specific shielding position.

7. The cutting device (1) according to any one of the preceding claims, wherein said protecting means (20) comprises an elongated shielding member (21).

8. The cutting device (1) according to the preceding claim, wherein said elongated shielding member (21) has a substantially cylindrical development.

9. The cutting device (1) according to claim 7 or 8, wherein said guide (3) has a prevalent development direction (A) and said elongated shielding member (21) extends substantially along said direction (A).

10. The cutting device (1) according to any one of the preceding claims, wherein said protecting means (20) comprises a front flange (22) apt to shield, during use, a corresponding portion of said cutting tool (22).

11. The cutting device (1) according to any one of the claims 7 to 10, wherein, during use, said partializing member (11) extends at a bottom portion of said cutting tool (2) and said elongated shielding member (21) extends at a top portion of said cutting tool (2).

12. The cutting device (1) according to any one of the preceding claims, wherein said cutting tool is a chain (2).

13. A cutting apparatus comprising a cutting device according to any one of the preceding claims and drive means for said cutting tool (2), apt to slide the latter on said guide (3) so as to impart it a cutting motion.

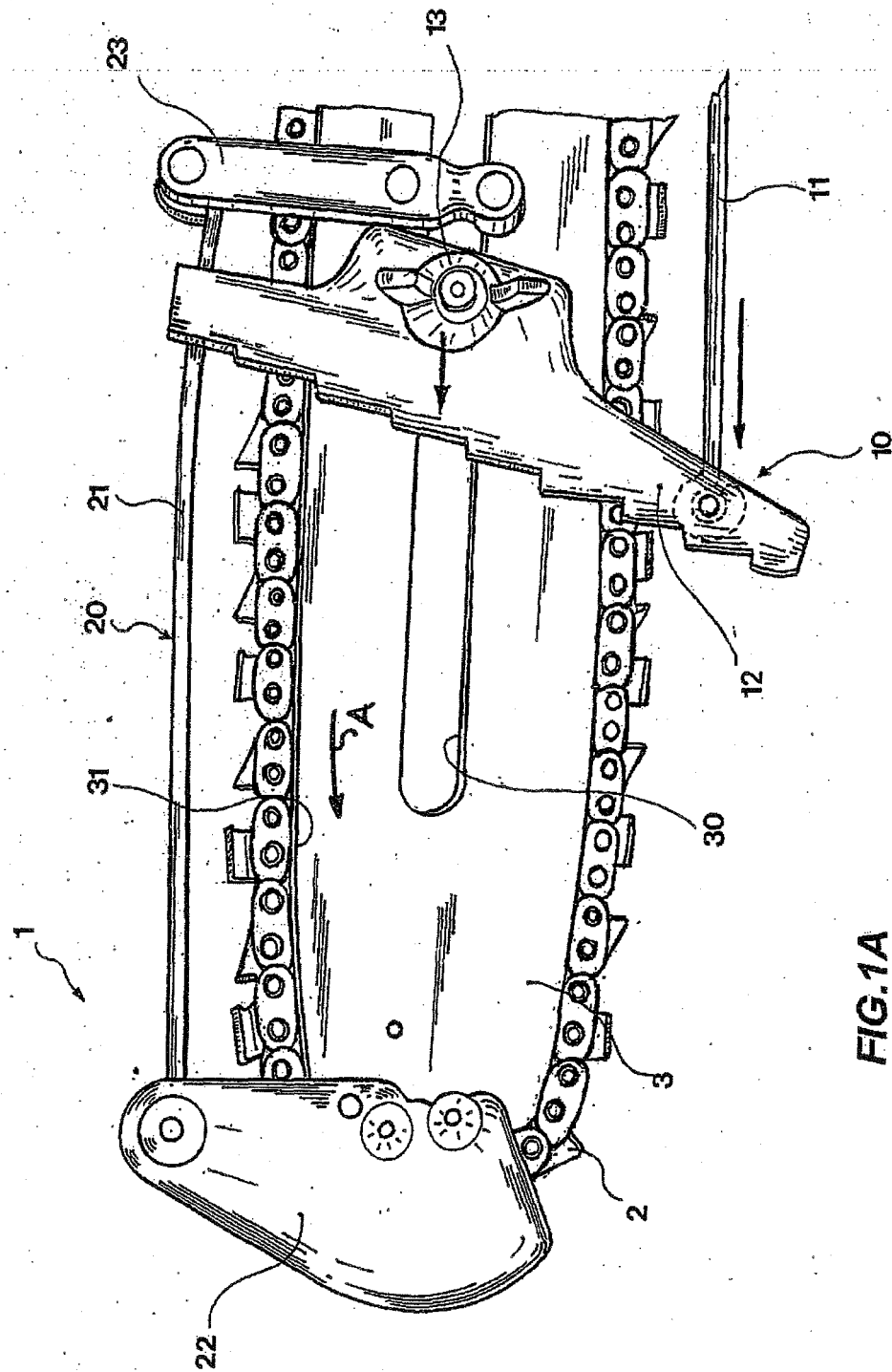


FIG. 1A

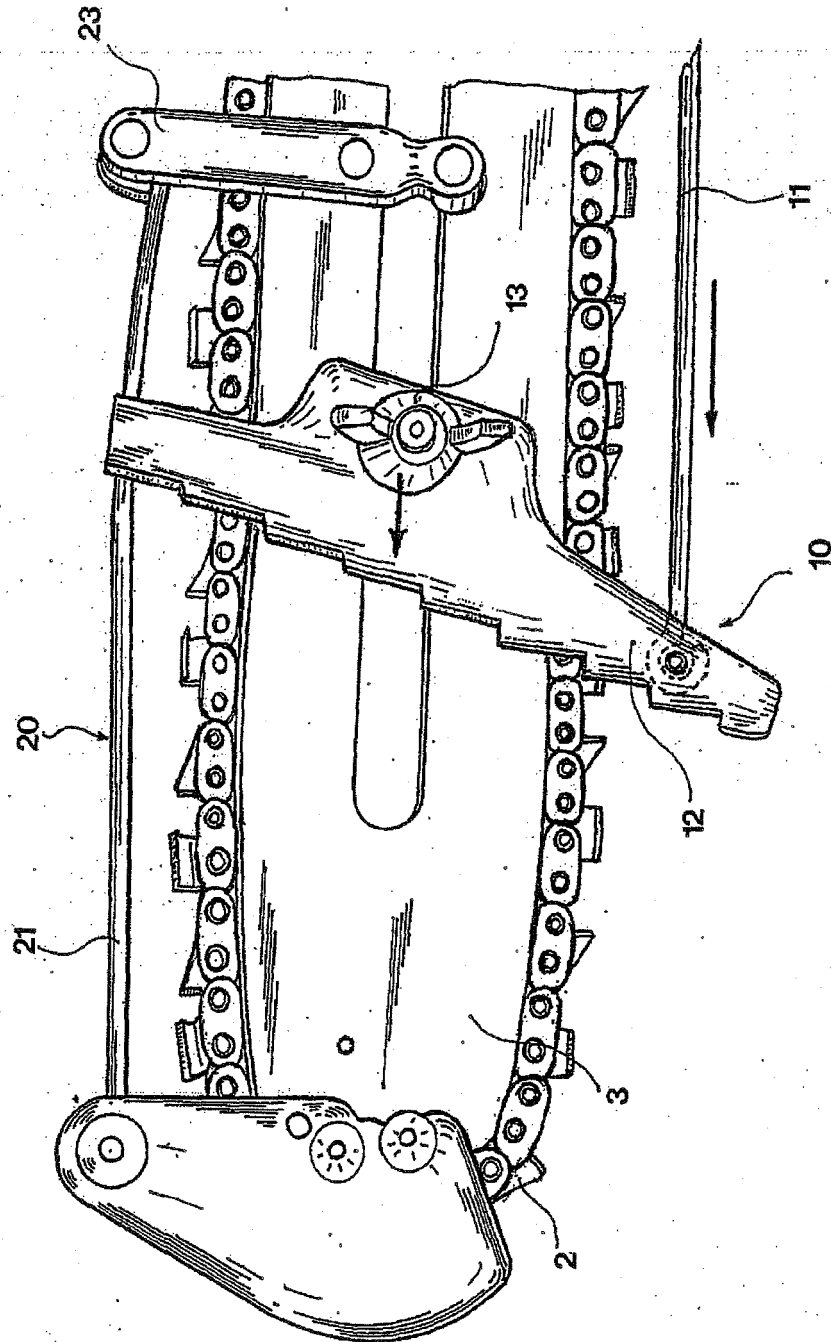


FIG. 1B

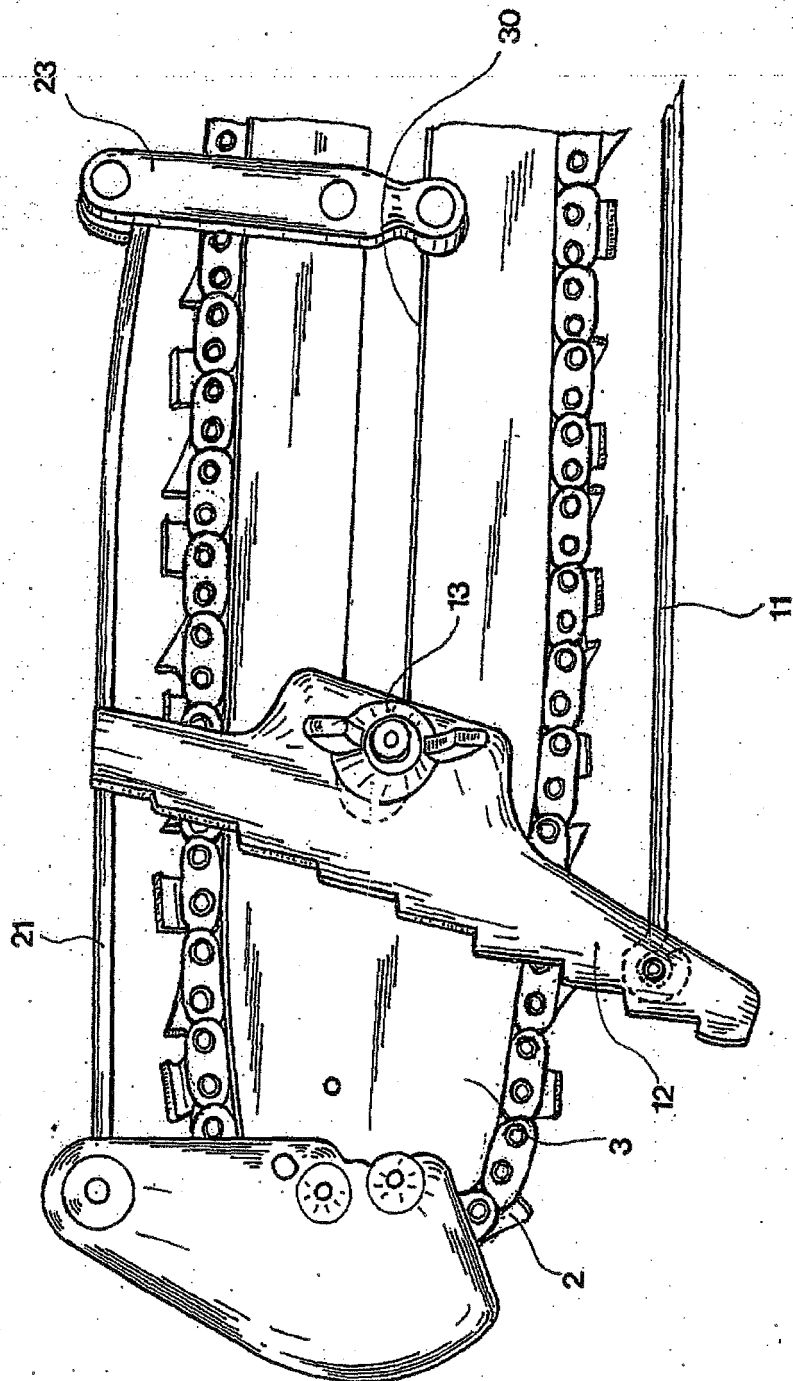


FIG.1C

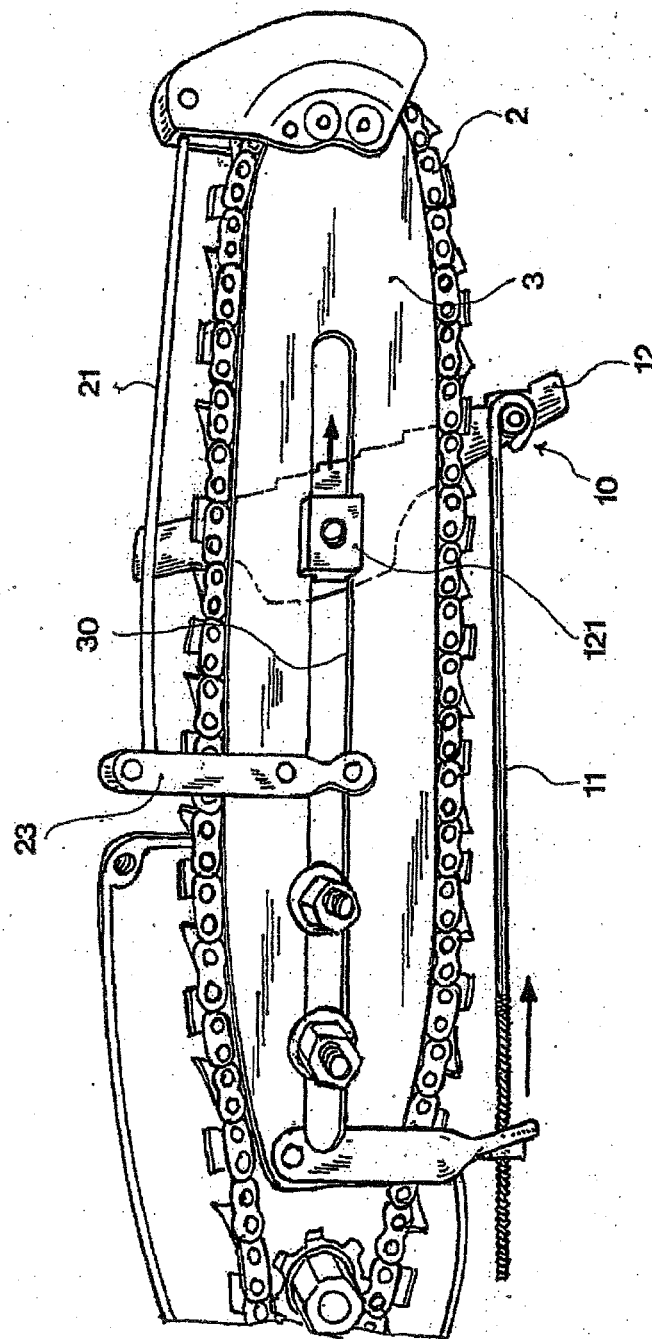


FIG. 2A

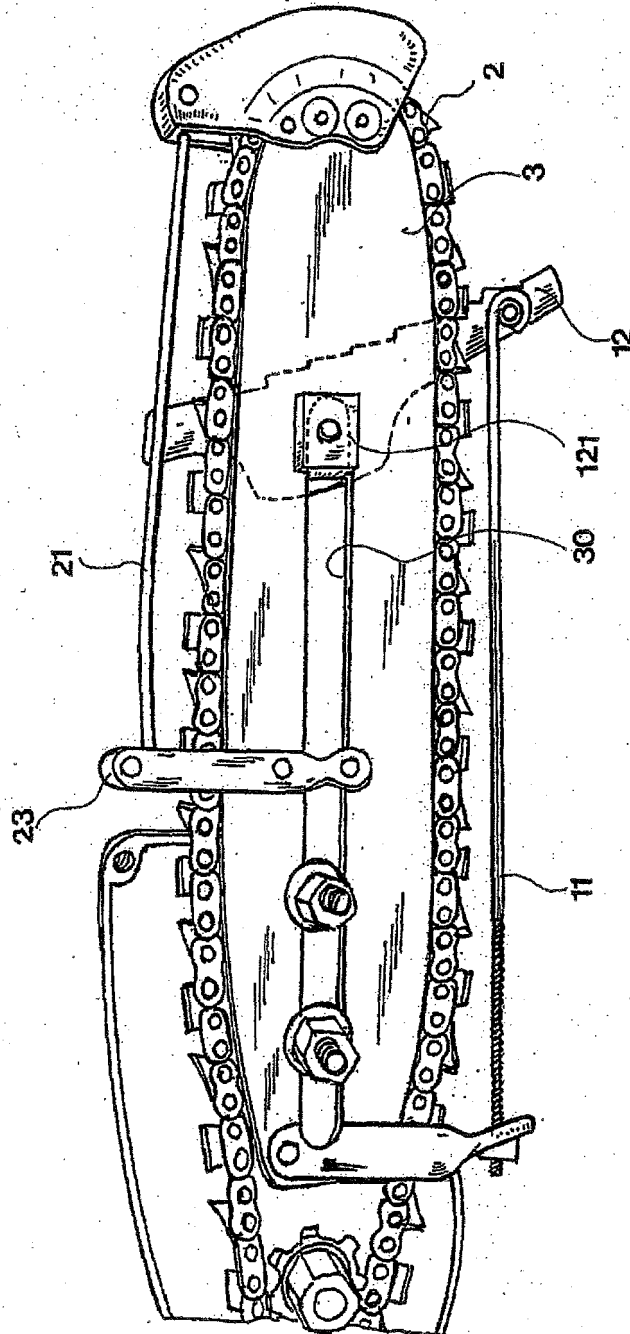


FIG. 2B



EUROPEAN SEARCH REPORT

Application Number
EP 10 15 0789

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 5 269 064 A (GREENE GORDON C [US] ET AL) 14 December 1993 (1993-12-14) * column 2, line 59 - column 3, line 43; figures *	1-13	INV. B27B17/02 B27G19/00
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A	US 5 535 521 A (ALCORN DAVID M [US]) 16 July 1996 (1996-07-16) * column 2, line 51 - column 3, line 7; figures *	1-13	
A	US 4 833 781 A (ALLEN WILLIAM J [US]) 30 May 1989 (1989-05-30) * figures 1-7 *	1-13	
A	US 4 317 285 A (GRAHAM WILLIAM W) 2 March 1982 (1982-03-02) * abstract; figures *	1,7-13	
A	US 5 123 168 A (LYONS WILLIAM E [US]) 23 June 1992 (1992-06-23) * figure 1 *	1,13	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) A01G B27B B27G
Place of search The Hague		Date of completion of the search 1 June 2010	Examiner Merckx, Alain
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 15 0789

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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01-06-2010

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