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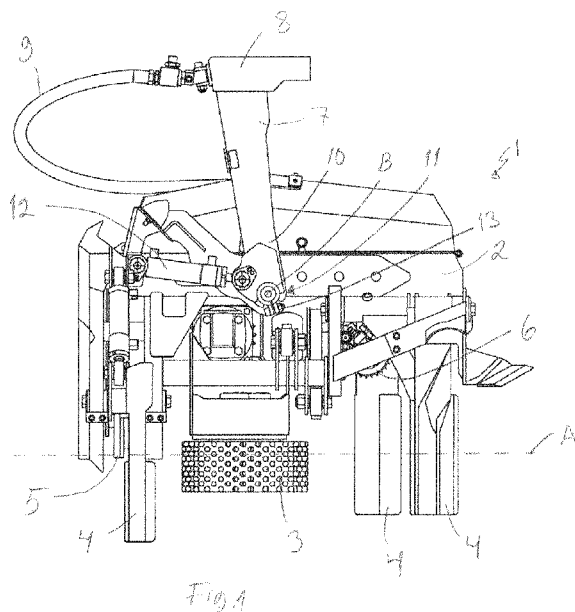
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- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

[Continued on next page]

(54) Title: HARVESTER HEAD AND METHOD OF USING A HARVESTER HEAD



(57) Abstract: The invention relates to a harvester head (1), which has a frame (2); tree processing members (3-6) attached to the frame, a pivot means, such as a tilt arm (7), attached to the frame with detachable attaching means (13), via which pivot means the harvester head can be attached to a base machine using it, which pivot means is arranged to be turnable around a pivot axis (B) in relation to the frame of the harvester head; power means (11, 12) arranged between the frame and the pivot means for turning the frame and the pivot means around the pivot axis in relation to each other. The harvester head is characterized in that the power means comprise a rotary actuator located on the pivot axis which is arranged to turn the frame and the pivot means in relation to each other by over 90 degrees, or that the attaching means are arranged to allow an alteration of the location of the pivot axis of the pivot means in relation to the frame.



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INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER

INV. A01G23/095 A01G23/097 A01G23/083 A01G23/085
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A01G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 194 542 A (ERIKSSON JAN A L [SE]) 25 March 1980 (1980-03-25)	1,2,4,9, 10
Y	column 2, line 26 - column 6, line 10; figures	5,6, 15-17, 29,39
X	US 5 727 610 A (ISLEY REGGALD EMORY [CA]) 17 March 1998 (1998-03-17)	1,2,4,9, 10
A	US 2004/134346 A1 (LEE JAE GYUN [KR] ET AL) 15 July 2004 (2004-07-15) paragraph [0022] - paragraph [0032]; figures	1,9
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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/238068 A1 (DUVAL ALAIN [CA]) 2 December 2004 (2004-12-02)	20-23, 29-33, 38-40
Y	paragraph [0034] - paragraph [0038]; figure 1	5,6, 15-17, 29,39
A		7,18, 34-37
A	----- WO 89/12383 A1 (ERCO MEK AB OY [FI]) 28 December 1989 (1989-12-28) page 3, line 7 - page 7, line 36; figures	20,31
A	----- US 4 881 582 A (KETONEN LAURI K [FI]) 21 November 1989 (1989-11-21) column 2, line 32 - column 3, line 18; claim 1; figures	20,31
A	----- US 6 068 033 A (BROUSSARD JAMES D [US] ET AL) 30 May 2000 (2000-05-30) column 5, line 14 - line 23; figures 1-3	28,37
A	----- US 5 832 975 A (HAMBY JR THOMAS E [US]) 10 November 1998 (1998-11-10) column 4, line 23 - line 40 column 8, line 40 - column 9, line 51; figures 7-10 -----	28,37

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2010/050188

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

1, 2, 4-7, 9, 10, 15-18, 20-40

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 2, 4, 9, 10

A harvester head with a frame and pivot means which are pivotable in relation to each other via a rotary actuator, whereby the actuator is hydraulic, thus allowing use to be made of a commonly available power source (description, p.5, para.4).

2. claims: 1, 3, 9, 11, 12

A harvester head with a frame and pivot means which are pivotable in relation to each other via a rotary actuator, whereby both a rotary actuator and hydraulic cylinder are present, thus providing increased torque (p.7, para.2).

3. claims: 1, 9, 13, 14

A harvester head with a frame and pivot means which are pivotable in relation to each other via a rotary actuator, whereby deceleration/acceleration of the turning between the pivot means and frame is effected, thus allowing the falling of a tree to be precisely controlled (p.7, para.1).

4. claims: 1, 5-7, 9, 15-18, 20-40

A harvester head with a frame and pivot means which are pivotable in relation to each other via a rotary actuator, whereby the attaching means allow alteration of the location of the pivot axis, thus allowing the centre of gravity to be optimised (p.7, para.3).

5. claims: 1, 8, 9, 19

A harvester head with a frame and pivot means which are pivotable in relation to each other via a rotary actuator, whereby the frame includes a tree cutting device, thus rendering the harvester head more flexible (p.17, para.4).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/FI2010/050188

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