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Datasheet for the decision of 24 January 2008

Case Number: T 1174/05 - 3.2.04

Application Number: 00939252.3

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Title of invention:
Agricultural machine and device

Patentee:
Väderstad-Verken AB

Opponent:
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KUHN-HUARD S.A.
Rabe Argarsysteme GmbH & Co.KG
Knoche Maschinenbau GmbH

Headword:
Displacement member/VÄDERSTAD

Relevant legal provisions:
EPC Art. 123
EPC R. 115(2)

Relevant legal provisions (EPC 1973):
EPC Art. 54(2), 56, 105

Keyword:
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:
T 0651/91

Catchword:
-

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Case Number: T 1174/05 - 3.2.04

D E C I S I O N
of the Technical Board of Appeal 3.2.04
of 24 January 2008

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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 29 June 2005 concerning maintenance of European patent No. 1182920 in amended form.

Composition of the Board:

Chairman: M. Ceyte
Members: P. Petti
T. Bokor

Summary of Facts and Submissions

In its interlocutory decision dated 29 June 2005 the opposition division found that the European patent No. 1 182 920 as amended and the invention to which it relates met the requirements of the EPC (Article 102 (3) EPC (1973).

Claim 1 as amended reads as follows:

"1. Agricultural machine comprising at least one elongate disc implement adapted to cultivate the ground, the disc implement comprising at least one pair of beams, including a first and a second beam (3a, 4a; 3b, 4b; 3c, 4c) arranged one behind the other in a predetermined essentially parallel position transverse to the direction of travel of the machine during cultivation, each beam being provided with a plurality of arms (12) provided with at least one essentially vertically arranged separately rotatable symmetrical disc (9), each arm (12) being resiliently suspended from either of said first or second beams, by means of rubber springing, respectively, the discs on the first and second beam being arranged in such a manner that the discs on the first beam (3a; 3b; 3c) are angled, in relation to the normal of the first and second beam respectively, and in the opposite direction to the corresponding discs on the second beam (4a; 4b; 4c), **characterised in that**
at least one displacement member (20) is provided for said first and second beam (3a, 4a; 3b, 4b; 3c, 4c), said displacement member being arranged so as to displace and lock the essentially parallel beams (3a, 4a; 3b, 4b; 3c, 4c) in pairs in relation to one

another, substantially in the longitudinal direction of the disc implement in at least one predetermined position."

I. On 9 September 2005 opponent III (hereinafter appellant) lodged an appeal against this decision and simultaneously paid the appeal fee. A statement setting out the grounds of appeal was received on 9 November 2005.

II. On 21 June 2006 a joint intervention under Article 105 EPC was filed by the firm "Knoche Maschinenbau GmbH", H. Knoche and J. Knoche (hereinafter interveners).

III. Oral proceedings before the board were held on 24 January 2008.

IV. Opponent I withdrew his opposition by letter of 7 June 2005.

Opponent II (party to the proceedings), who had been duly summoned, informed the board by letter dated 14 January 2008 that he would not attend the oral proceedings which, pursuant to Rule 115(2) EPC, were continued without him.

V. The appellant and the interveners requested that the decision under appeal be set aside and the patent be revoked.

The patent proprietor (hereinafter respondent) requested that the appeal be dismissed (main request). Auxiliarily, he requested that the decision under appeal be set aside and the patent be maintained in

amended form on the basis of one of the auxiliary requests filed by letter dated 21 December 2007.

VI. The appellant and the interveners essentially submitted that the subject-matter of claim 1 of the main request lacked either novelty or inventive step.

With respect to novelty, documents FR-A-1 079 859 (D1), EP-A-619 937 (D18), US-A-5 394 945 (D20) and DE-A-19 630 079 (D32) were referred to by the parties.

During oral proceedings the appellant submitted that the claimed subject-matter was not inventive starting from document WO-A-85/05246 (D22). This document corresponds to the document SE-B-449 548 (D3) which is cited in paragraph [0001] of the patent specification. In writing, the appellant had also argued that the claimed subject matter lacked an inventive step when starting from starting from documents D1 or EP-A-428 198 (D6).

With respect to inventive step, the interveners submitted three argumentation lines in which the starting points were documents D1 or D18 or the leaflet "Schwere Scheibenegge EXCELLENT" of the firm Väderstad (hereinafter document D34), respectively.

Reasons for the Decision

Since the European patent was already granted at the time of the entry into force of the EPC 2000 on 13 December 2007, the transitional provisions according to Article 7 of the Act revising the EPC of 29 November 2000 and the Decisions of the Administrative Council of 28 June 2001 and of 7 December 2006,

Article 2, have been applied. When Articles or Rules of the version of the EPC 1973 are cited, the year is indicated.

1. The appeal and the intervention under Article 105 EPC (1973) are admissible.

2. *Amendments (main request)*

2.1 Claim 1 of the patent as accepted by the opposition division differs from granted claim 1 in that the feature (in granted claim 1)

"each arm (12) being resiliently suspended from either of said first or second beam respectively"

has been replaced by the feature

"each arm (12) being resiliently suspended from either of said first or second beam**, by means of rubber springing,** respectively".

This amendment does not extend the scope of the claim and can be clearly and unambiguously derived from the application as filed (page 6, lines 16 to 18). Therefore, it does not contravene the requirements of Article 123(2) and (3) EPC).

2.2 The terms "by means of rubber springing, respectively" have to be read in the context of the whole claim and in particular of the feature "each arm being resiliently suspended from either of said first and second beams, by means of rubber springing, respectively". In this context, the word "respectively" means "relatively to each of the beams" and makes it

clear that each arm is resiliently suspended from the respective beam to which it is connected.

Therefore, the amendment has to be considered as clearly limiting the claimed subject-matter.

3. *Concerning the expression "adapted to cultivate the ground"*

3.1 According to the preamble of claim 1 the elongate disc element is "adapted to cultivate the ground".

In this respect, the respondent essentially argued that the terms "adapted to cultivate the ground" in the context of the patent specification only relate to the cultivation effected before seeding and that neither weeding machines as disclosed in documents D18, D20 and D13 nor seeding machines as disclosed in documents D3 and D22 are adapted to cultivate the ground.

The appellant and the interveners contested these arguments essentially by arguing that the terms "adapted to cultivate the ground" embrace all machines for mechanical treatment of the ground, such as weeding machines, seeding machines and harrows.

3.2 In this respect, it is observed that claim 1 does not refer to a machine adapted to cultivate the ground but to a machine provided with a "disc implement adapted to cultivate the ground".

3.3 Moreover, according to claim 1, the disc implement includes at least one pair of **beams** provided with discs and that the discs on the first and second beam of the

disc implement are arranged in such a manner that "the discs of the first beam (3a; 3b; 3c) are **angled**, **in relation to the normal** of the first and second beam respectively **and in the opposite direction to the corresponding discs** on the second beam (4a; 4b; 4c)" (emphasis added).

These features in conjunction with the feature that the beams are arranged one behind the other in a predetermined parallel position transverse to the direction of travel of the machine imply that each disc forms a cutting angle with respect to the normal of respective beam, i.e. that the rotation axis of each disc is inclined with respect to the longitudinal axis of the respective beam which is essentially perpendicular to the direction of travel of the machine. This is consistent with the drawings (Figure 3) and the description of the patent specification, according to which the discs have a preset angle in both the horizontal plane and the vertical plane (column 3, lines 36 and 37).

These features also imply that there is a correspondence between a disc of the front beam and a disc of rear beam, such that a pair of corresponding discs is capable of **cutting** the soil with different angles is formed. Thus, the expression "disc implement adapted to cultivate the ground", read in conjunction with these features of claim 1, means that the disc implement is capable of opening grooves in the soil by means of each pair of corresponding discs.

4. *Interpretation of the characterising features of claim 1*

4.1 The terms "for said first and second beam" after the expression "at least one displacement member is provided" make it clear that there is a displacement member which is common to both beams of a pair. In this respect, it has to be noted that claim 1 - in so far as it refers to a disc implement comprising "**at least one** pair of beams, including a first and a second beam" (emphasis added) - also covers implements having several pairs of beams. Thus, although the terms "at least one displacement member" may define a plurality of displacement members, it is clear that *each* displacement member is common to the respective pair of beams.

This interpretation is consistent with the submissions made by the respondent during oral proceedings, who argued that there is a connection between the two beams of a pair in order to displace them relative to each other, this connection being made by a displacement member common to both beams of each pair.

This interpretation is also consistent with Figure 5 the patent which shows at least two front and rear beams connected to each other by plates and by a member 20 consisting of a rigging screw (see column 4, lines 41 to 44). A first arrow is represented around the rigging screw 20, while a second arrow is represented along the rear beam. It can unambiguously be derived from Figure 5 that by rotating the rigging screw 20 (as shown by first arrow) the rear beam will be displaced relative to the front beam (as shown by the second arrow).

4.1.1 In this respect the appellant and the interveners essentially argued as follows:

– The characterising features - in so far as the displacement member is defined as being arranged so as to displace the beams in pairs - are inconsistent with Figure 5 of the patent which shows a rear beam which can be displaced relative to the front beam which is rigidly connected to the machine.

– The embodiment according to Figure 5 would not work because between front and rear beams there is a rigid connection which would not allow any relative movement between the beams.

4.1.2 The board cannot accept these arguments for the following reasons:

– According to claim 1, the displacement member is "arranged so as to displace and lock the essentially parallel beams (3a, ...) in pairs **in relation to one another**" (emphasis added). This feature, which lets it open which beam is displaced in relation to the other one, only represents a generalisation of the example of Figure 5 showing a displacement member arranged to displace and lock the rear beam in relation to front beam. Therefore, there is no inconsistency between claim 1 and the description of the patent.

– The skilled person looking at Figure 5 would immediately realize that the plates connecting

front and rear beams have a certain degree of resiliency allowing the displacement of the rear beam relative to the front beam.

4.2 Moreover, the displacement member has to be construed as a means which actively performs both functions of displacing and locking the beams of a pair in relation to each other.

5. *Novelty (main request)*

5.1 During oral proceedings, the appellant and the interveners argued that the subject-matter of claim 1 lacked novelty having regard to document D18. The appellant had also submitted in writing that the subject matter of claim 1 was not novel over D20 or D32.

5.2 Documents D1, D18 and D20 each disclose an agricultural machine comprising at least one elongate disc implement including a first and a second beam, each of the beams being provided a plurality of arms, each arm being resiliently suspended from the beam, **by means of springing**.

The agricultural machine disclosed in document D32 is provided with arms (each of which carries a disc) which are not resiliently suspended from a beam.

The feature in claim 1 that each arm is resiliently suspended from the beam **by means of rubber springing** is not disclosed by these prior art documents.

5.2.1 In document D1 or D18 each arm is resiliently or elastically suspended from the respective beam.

Document D1 refers to an independent elastic joint for each arm, the elastic joint being formed by one or more springs ("une articulation élastique de chaque bras, réalisé au moyen d'un ou plusieurs ressorts ..."; see page 1, right-hand column, 2nd paragraph). Document D18 refers to "a compression coil spring 114" (see column 5, lines 3 to 5).

Thus, these documents generally disclose springs without specifying the material of the springs. However, the generic disclosure "springs" in these prior art documents does not take away the novelty of the specific term "rubber springing" in the claim (see for instance T 651/91).

5.3 Therefore, the subject matter of claim 1 of the main request is novel (Article 54(2) EPC (1973)).

6. *Inventive step*

6.1 *Document D1 as starting point*

6.1.1 This citation discloses an agricultural machine comprising at least one elongate disc implement which is adapted to cultivate the ground, the disc implement comprising a frame having a first beam and a second beam (see particularly Figure 9), the beams being arranged one behind the other in a predetermined essentially parallel position transverse to the direction of travel of the machine during cultivation, each beam being provided with a plurality of arms (see Figures 1 to 7) provided with at least one essentially vertically arranged separately rotatable symmetrical disc, each arm being resiliently suspended from either

of said first or second beams, by means of springing, respectively. The discs on the first and second beam are arranged in such a manner that the discs on the first beam are angled, in relation to the normal of the first and second beam, respectively, and in the opposite direction to the corresponding discs on the second beam.

According to the paragraph bridging left-hand and right-hand columns on page 1, the width of the frame carrying the discs can be adjusted ("[châssis] à écartement variable"). Having also regard to Figure 9, it has to be assumed that the essentially parallel beams constituting the frame can manually be displaced in the longitudinal direction of the disc implement (i.e. transversely to the direction of travel of the machine) and manually locked in a desired position. The displaceability of the beams permits the adaptation of the machine to the width of the planted crop. Document D1 does not disclose how the beams are displaceable. In fact, D1 merely contains a general statement that appropriate adjustment of the frame in every direction ("un cadre réglable en tous sens") is possible but no specific details are given. It is evident for a skilled person that the provision of adjustment means between each and every part of a machine is quite unrealistic, and therefore this general statement is of no further use for the skilled person.

6.1.2 The claimed subject-matter differs from this prior art in that

a) the springing is a rubber springing,

b) at least one displacement member (20) is provided for said first and second beam, said displacement member being arranged so as to displace and lock the essentially parallel beams (3a, 4a; 3b, 4b; 3c, 4c) in pairs in relation to one another in the longitudinal direction of the disc implement in at least one predetermined position.

6.1.3 In this respect, the appellant and the interveners argued that document D1 also discloses feature b) in so far as it refers to an adjustable frame carrying the discs.

The board cannot accept this argument because document D1 - even if the skilled person were to immediately understand that each of the beams ("bras porte-disque") of the frame shown in Figure 9 can manually be displaced in a predetermined position and locked in this position by means of clamps ("brides") - does not disclose a displacement member which actively performs both functions of displacing and locking the beams of a pair in relation to each other.

6.1.4 When agricultural machines as described in D1 are used for harrowing, it is important to completely cut out all the roots of the weeds. These machines suffer the disadvantage that it is difficult to make the front and the rear discs cut in straight line in relation to each other under different circumstances (see column 1, lines 36 to 39 and 45 to 47 of the patent specification). More particularly, if the type of soil, the working depth or the speed of travel change, the reaction forces exerted by the soil on the discs change

and, thus, a misalignment between front and rear discs may be produced, due to the different orientation of front and rear discs (relative to the direction of travel) and the resiliency of the various parts of the machine.

Feature b) results in providing an agricultural machine in which the beams can easily be adjusted so as to make the front and the rear discs cut in straight line in relation to each other.

Thus, the technical problem to be solved is to provide a machine which is capable of avoiding the above mentioned disadvantages.

6.1.5 The interveners submitted that this problem is not solved by the claimed agricultural machine in so far as the implement of the claimed machine is not capable of cultivating the whole surface and thus of cutting off all weed roots because an uncultivated ridge may remain between two adjacent pairs of corresponding front and rear discs.

The board considers this argument as being irrelevant because it is clear that displacing front and rear beams relative to each other makes it possible that at least the corresponding discs of a pair cut in straight line in relation to each other.

6.1.6 As to whether the claimed solution is inventive, the following has to be noted:

i) Documents D18 and D20 each concern an agricultural machine provided with a disc implement comprising

two parallel rows of discs, in which each row of discs is provided with its displacement member consisting of a hydraulic ram which actively displaces and lock the respective row independently of the other row. Furthermore, these documents address the problem of positioning the discs at a very close distance to the planted crop with the discs of the front row at the one side of the crop and the corresponding discs of the rear row at the opposite side of the crop. Therefore, there is no incentive from document D18 or D20 to make the front and the rear discs cut in straight line in relation to each other under different circumstances.

ii) Document D13 discloses an agricultural machine provided with two parallel beams ("Stangen" e and f), each beam carrying shares ("Hackmesser" a) as well as protecting discs ("Schutzrollen" b). The two parallel beams are provided with a displacement member which is suitable for displacing and locking the beams in pairs in relation to the first one in a direction transverse to the direction of travel of the machine so as to adjust the width of the strip beside the growing plants. Thus, there is no incentive from D13 to make the front and the rear discs cut in straight line in relation to each other.

iii) Document D4 discloses a seeding machine comprising two parallel rollers each comprising a plurality of conical rings ("Keilringe"). The rings of the first roller open furrows in which seeds are

deposited, while the rings of the second roller can either press the seeds in the soil or close the furrows. The two parallel rollers are provided with a displacement member (20) consisting of a rigging screw which is suitable for displacing and locking the second roller in pairs in relation to the first one in a direction transverse to the direction of travel of the machine. In this seeding machine, the above mentioned technical problem cannot occur, because it is not provided with discs cutting the soil which are angled with respect to the travel direction of the machine normal. Therefore, the skilled person would not consider this document to solve the problem.

Therefore, the skilled person confronted with the above mentioned technical problem would have no reasons to consider the teaching of documents D13, D20 or D4.

Furthermore, neither document D32 nor document D2 discloses or suggests the characterising feature b). More particularly:

iv) Document D32 discloses a disc harrow provided with a disc implement comprising at least two parallel rows of discs, in which each row of discs is provided with its own displacement member which is arranged so as to pivot all the disc of the row about the respective vertical axis.

v) Document D2 discloses an agricultural machine provided with a disc implement comprising two parallel beams ("disc gang members" 31) carrying discs. Each of the beams can manually be displaced

in a direction which is substantially transverse to direction of travel of the machine, wherein lock members (bolts 37) are provided to lock each of the beams in a predetermined position. The lock members cannot be considered as displacement members arranged so as to displace and lock the beams.

6.1.7 Therefore, the skilled person starting from the prior art known from D1 would not arrive at the claimed solution in an obvious way.

6.2 *Document D6 as starting point*

6.2.1 This citation discloses (see particularly Figures 2 and 3) an agricultural machine comprising at least one elongate disc implement which is suitable for cultivating the ground, the disc implement comprising a first and a second beam, arranged one behind the other in a predetermined essentially parallel position transverse to the direction of travel of the machine. Each beam is provided with a plurality of arms (4, 5) provided with at least one essentially vertically arranged separately rotatable symmetrical disc (6), each arm (4, 5) being connected to either of said first or second beam by a bearing means (3). The discs (6) on the first and second beam are angled, in relation to the normal of the first and second beam, respectively, and in the opposite direction to the corresponding discs on the second beam.

6.2.2 The claimed subject-matter differs from this prior art in that

a') each arm is resiliently suspended from the respective beam by means of rubber springing,

b) at least one displacement member (20) is provided for said first and second beam, said displacement member being arranged so as to displace and lock the essentially parallel beams (3a, 4a; 3b, 4b; 3c, 4c) in pairs in relation to one another in the longitudinal direction of the disc implement in at least one predetermined position.

6.2.3 Thus, document D6 is less relevant than document D1.

In any case, the considerations in the above section 6.1 also apply when starting from D6. Therefore, the skilled person starting from this prior art would not arrive at the claimed solution in an obvious way.

6.3 *Document D22 as starting point*

6.3.1 This citation discloses (see particularly Figures 1 to 3 and 7) an agricultural machine for directly feeding out seed, comprising at least one elongate disc implement comprising a first and a second beam ("square tubes (68)"; see claim 3 and Figure 3), arranged one behind the other in a predetermined essentially parallel position transverse to the direction of travel of the machine. Each beam is provided with a plurality of arms (17, 18) provided with at least one essentially vertically arranged separately rotatable symmetrical disc (4, 5), each arm (17, 18) being resiliently suspended from either of said first or second beam by means of rubber springing (19, 20), respectively. The discs (4, 5) on the first and second beam are angled,

in relation to the normal of the first and second beam, respectively (see Figure 7). Document D22 does not give any indication as to how the discs on the first beam are angled with respect to the corresponding discs on the second beam. Each disc of the first beam forms with a disc of the second a pair, each pair of discs being associated with a support wheel (see page 6, lines 33 to 35).

6.3.2 The claimed subject-matter differs from this prior art machine at least by feature b), see the above section 6.1.2.

6.3.3 In this respect, the appellant argued that feature b) is known from document D4, which also relates to a seeding machine, and that it would be obvious for a skilled person to combine the teachings of documents D22 and D4.

6.3.4 The board cannot accept this argument for the following reasons:

i) It is clear from Figures 2 to 6 of D22 that each disc of a corresponding pair opens a furrow in which a seed is fed, the furrow opened by the front disc being spaced from the furrow opened by the rear disc of the same pair of discs. Therefore, in this seeding machine there is no need to make front and rear discs cut in straight line in relation to each other.

ii) The claimed subject-matter differs from the prior art known from document D22 not only by feature b) but also in that the discs on the first beam are

angled (in relation to the normal to the normal of the first and second beam) in the opposite direction to the corresponding discs on the second beam and in that the disc implement is adapted to cultivate the ground.

6.3.5 Therefore, the board does not consider document D22 as a realistic starting point for evaluating the inventive merits of the claimed solution.

In any case, for the same reasons given for document D1, the skilled person starting from D22 would not arrive at the claimed solution in an obvious way.

6.4 *Document D18 as starting point*

6.4.1 This document discloses an agricultural machine comprising at least one elongate disc implement for cutting weeds in row crop cultivation (see column 1, lines 9 to 11) and, thus, adapted to cultivate the ground. The disc implement comprises three rows (4a, 4b and 4c) of essentially vertically arranged separately rotatable symmetrical discs (16), the rows being arranged one behind the other in a predetermined essentially parallel position transverse to the direction of travel of the machine. Each of first and second rows is provided with three discs, while the third row is provided with six discs. Each row comprises a beam (the "angle iron" 82) to which a plurality of arms (96) is connected, each arm carrying one of the discs (16), each arm (96) being resiliently suspended (via "actuating levers" 106) from either of said first or second or third beams (82), respectively, by means by means of coil springing. The discs (16) of

the first and second rows are angled, in relation to the normal of the first and second beam, respectively, and in the opposite direction to the corresponding discs on the second beam, so as to effect mechanical weeding of the ridges on each side of the planted crop. The discs of the third row are arranged in pairs with the discs of each pair inclined in two opposite directions so as to refill the ridges formed by the discs of the preceding rows. A hydraulic ram (40) is provided for each of the beams, said hydraulic being arranged so as to displace and lock the respective beam (72) substantially in a direction transverse to the direction of travel of the machine, wherein each beam can be displaced independently from the other beams.

6.4.2 With respect to document D18, the interveners essentially argued as follows:

i) Each of the six discs of the third row (4c) is arranged so as to correspond either with a disc of the first row or to a disc of the second row. Each of the hydraulic rams (40) can be considered as a "displacement member" embodying feature b).

ii) Therefore, the claimed subject-matter would differ from the weeding machine of document D18 only by the provision of rubber springing. It would be obvious for a skilled person to use well known rubber springs instead of coil springs and, this, arrive at the claimed subject-matter without inventive skill.

6.4.3 The Board is unable to follow this reasoning:

D18 does not disclose a displacement member which is common to the pair of beams.

More importantly, claim 1 requires that the discs are arranged in such a manner that "the discs on the first beam (3a; 3b; 3c) are angled, in relation to the normal of the first and second beam respectively, and in the opposite direction to the corresponding discs on the second beams (4a; 4b; 4c)". This also means that the discs on either the first or the second beam are all inclined or angled in the same direction, see also Figure 2. This is not the case of the discs of the third row shown in Figure 2 of D18 where the discs are arranged in pairs with the discs of each pair inclined in opposite directions. As shown in Figure 2, the discs of each pair are arranged on either side of the crop plants B planted in a row on a ridge formed in the soil "so as to effect ridge refilling immediately after the weeding operation effected by the two first rows of discs 16 have been completed" (column 6, lines 20 to 25). There is therefore no incentive to use the pairs of discs of the third row for the weeding operation.

It is true that similar to the claimed invention the first discs of the first row are inclined in opposite direction with respect to the rear discs of the second row. More precisely, the first row of discs carried by the transverse beam 4a are inclined with respect to the direction of movement of the machine so as to remove the weeds on one side of the crop plants B planted in a row while the discs of the second row carried by the second beam 4b are inclined in the opposite direction

and disposed on the opposite side of the row of crop plants B so as to effect weeding on said opposite side (column 4, last paragraph). There is thus no teaching of making the discs of the first row and the discs of the second row cut in a straight line in relation to one another. Moreover the first or the second row is laterally displaceable in order to bring the inclined discs in close proximity to the rows of crop plants without destroying or violating the crops. Therefore there is no incentive to displace the rows of discs in order to bring the front disc of the first row in a special relationship to the rear disc of the second row so as to cut off all the roots of the weeds independently of the type of soil, the working speed of the machine, the working depths ect..

From the foregoing considerations it follows that D18 does not give the skilled person any indication that all the roots of the weeds may be cut off by making the front and the rear discs cut in a straight line in relation to one another under the different circumstances mentioned above.

As has been already stated, the problem mentioned in the patent specification is to "cut off all the roots of the weeds in order to achieve the maximum effect in weed control independently *inter alia* of the different types of soil, the working depths and the resilience of the various parts (paragraphs [0005] and [0006] of the patent specification).

This problem is solved in combination with the arrangement of parallel beams, the discs of the first beam being inclined on the opposite direction with

respect to the discs of the second beam, by the special relative displacement of the beams so that the front and the rear discs cut in a straight line in relation to one another under the different circumstances mentioned above. In D18 one front disc of the first row and the corresponding rear disc of the second row are arranged on either side of one row of crop plants and thus cannot be respectively be displaced so that they cut in a straight line without destroying or deteriorating the row of crop plants. Therefore D18 teaches away from the claimed invention. In the invention the beam is displaced relative to the other so that the front and rear discs cut in a straight line in relation to one another. On the contrary, D18 expressly states that the disc of the two rows are independently laterally shiftable, see column 5, lines 56 - column 6, in line 3. It also follows that the citation is not a realistic starting point for evaluating the inventive merits of the claimed invention.

Furthermore, the weeding machine of D18 is adapted for crops planted on equally spaced ridges with intervening furrows and for weeding lateral zones which are very close to planted ridges. In particular the machine shown in Figure 2 is not designed to cut off all the plant roots or the weed roots present in the furrow between planted ridges. Consequently, if a machine as shown in Figure 2 would be used as weeding machine before the growing period (i.e. before seeding), it would not be able to achieve - without substantial modifications - the object of the invention, i.e. to cut off all the roots of the weeds in order to attain the maximum effect in weed control.

6.4.4 Therefore, the skilled person starting from D18 would not arrive at the claimed solution in an obvious way.

6.5 *Document D34 as starting point*

6.5.1 This citation discloses an agricultural machine comprising at least one elongate disc implement which is adapted to cultivate the ground, the disc implement comprising two pairs of beams, wherein the beams of each pair are arranged one behind the other. The two beams of a pair can be displaced between two positions, namely from a first position in which both beams are positioned in an essentially parallel position transverse to the direction of travel of the machine to a second position in which they diverge from one another and the longitudinal axis of each beam forms an angle (max 25°) with respect a direction transverse to the direction of travel. Each beam of a pair is provided with a plurality of arms provided with at least one essentially vertically arranged separately rotatable symmetrical disc, each arm being resiliently suspended from either of the beams of a pair by means of rubber springing. The discs on the beams of a pair are perpendicular to the longitudinal axis of the respective beam.

6.5.2 In this respect, the interveners essentially argued as follows:

i) Document D34 discloses an agricultural machine having all the features specified in the pre-characterising portion of claim 1, whose subject-matter differs therefrom only by the feature b).

ii) The agricultural machine known from D34 has the drawback that the working width of the implement cannot be changed without changing the cutting angle of the discs and thus the way of working of the machine. Starting from this document, the skilled person would be confronted with the problem of making it possible to vary the working width independently of way of working of the machine. In order to solve this problem the skilled person would be obliged to adopt the solution based upon feature b), which feature is also suggested by each of documents D2, D13, D33 or D18.

6.5.3 The board cannot accept these arguments for the following reasons:

The agricultural machine of document D34 is a disc harrow in which the disc-bearing beams are arranged in an X-shape. The cutting angle of the discs of a beam can be changed and set by changing the X-configuration, i.e. by changing the angle of the beams with respect to a direction transverse to the travel direction of the machine (this angle varying from 0° to 25°). When the beams are perpendicular to the travel direction of the machine (and thus parallel to one another) the cutting angle is 0°. Thus, the axes of the discs of a beam are parallel to the longitudinal axis of the beam. In other word the discs do not have a preset angle in the vertical plane.

Therefore, the features that the discs of each beam are angled in relation to the normal of respective beam

while the beams are arranged in a predetermined essentially parallel position transverse to the direction of travel of the machine are not disclosed in document D34.

6.5.4 Therefore, the machine of document D34 does not correspond to the kind of machines defined in the pre-characterising portion of claim 1. Document D34 is thus less relevant than document D1 and would not be a realistic starting point. In any case, for the same reasons given for document D1 (see the above section 5.1), even if a skilled person were to start from a machine according to D34, he would not arrive at the claimed subject-matter in an obvious way.

6.6 It follows that the subject-matter of claim 1 of the main request involves an inventive step (Article 56 EPC 1973).

7. Therefore, the patent in the amended version upon which the decision under appeal is based is found to meet the requirements of the EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Magouliotis M. Ceyte