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**Datasheet for the decision  
of 9 October 2020**

**Case Number:** T 1622/17 - 3.2.04

**Application Number:** 12162080.1

**Publication Number:** 2517545

**IPC:** A01C7/04

**Language of the proceedings:** EN

**Title of invention:**

Seeding machine

**Patent Proprietor:**

Deere & Company

**Opponent:**

Amazonen-Werke  
H. Dreyer GmbH & Co. KG

**Headword:**

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step - (no)

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T 1408/04

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

Boards of Appeal of the  
European Patent Office  
Richard-Reitzner-Allee 8  
85540 Haar  
GERMANY  
Tel. +49 (0)89 2399-0  
Fax +49 (0)89 2399-4465

Case Number: T 1622/17 - 3.2.04

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.04**  
**of 9 October 2020**

**Appellant:** Amazonen-Werke  
(Opponent) H. Dreyer GmbH & Co. KG  
Am Amazonenwerk 9-13  
49205 Hasbergen-Gaste (DE)

**Representative:** Grünecker Patent- und Rechtsanwälte  
PartG mbB  
Leopoldstraße 4  
80802 München (DE)

**Respondent:** Deere & Company  
(Patent Proprietor) One John Deere Place  
Moline, IL 61265 (US)

**Representative:** Reichert, Christian  
John Deere GmbH & Co. KG  
Global Intellectual Property Services  
John-Deere-Straße 70  
68163 Mannheim (DE)

**Decision under appeal:** **Decision of the Opposition Division of the European Patent Office posted on 18 May 2017 rejecting the opposition filed against European patent No. 2517545 pursuant to Article 101(2) EPC.**

**Composition of the Board:**

**Chairman** J. Wright  
**Members:** G. Martin Gonzalez  
T. Bokor

## **Summary of Facts and Submissions**

- I. The appeal was filed by the appellant (opponent) against the decision of the opposition division to reject the opposition filed against the patent in suit (in the following, "the patent").
- II. The opposition division decided that the subject-matter of the claims as granted involved an inventive step.
- III. Oral proceedings before the Board were held on 9 October 2020.
- IV. The appellant-opponent requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

The respondent-proprietor requested that the appeal be dismissed, that is that the opposition be rejected and that the patent be maintained as granted.

- V. Claim 1 of the sole request (as granted) reads as follows:

"A seeding machine (10) adapted to be moved over soil in a planting operation to plant seed, the machine (10) comprising: a row unit (24) having a trench opener (42), seed meter (36, 136), and a motor (66, 140) to drive the seed meter (36, 136); and a control system (80) including a seed sensor (100, 102) associated with the seed meter (36, 136), wherein the control system (80) is adapted to operate the motor (66, 140) prior to operation of the seeding machine (10) to plant seed, to drive the seed meter (36, 136) in a priming operation to fill the seed meter (36, 136) with seed,

characterized in that the control system (80) is adapted to stop the motor (66, 140) in response to seed being detected by the associated seed sensor (100, 102) whereby when beginning a planting operation moving the seeding machine (10) over a field, seed is immediately discharged from the seed meter (36, 136)".

VI. In the present decision, reference is made to the following documents:

D1: DE69914280 T2

D2: EP0650660 A1

VII. The appellant-opponent's arguments can be summarised as follows:

The broadest interpretation of claim 1 is a seeding machine having just one sensor that is associated with the seed meter of just one row unit.

The combination of D1 with D2 takes away inventive step of claim 1.

VIII. The respondent-proprietor's arguments can be summarised as follows:

Claim 1 defines a seeding machine having a plurality of row units, each with an associated sensor.

The skilled person would not combine D1 and D2 because they are concerned with different kinds of seed dispensing machines. Even if they were to make such a combination this would not lead them to individually control a plurality of row units as claimed.

### **Reasons for the Decision**

1. The appeal is admissible.

2. Background

2.1 The patent relates to a seeding machine having a control system and a row unit with a motorised seed meter (see published patent specification, paragraph [0001] and claim 1). A problem with such machines is that seed can be spilled on the ground when filling the seed meter prior to planting. An object of the invention is to minimise seed-waste during planting (see specification, paragraph [0010]).

2.2 According to the invention (see paragraph [0012] and claim 1) the control system operates the motor to fill the seed meter with seed prior to planting in a priming operation, so that it can be planted immediately as soon as the machine moves. In order to minimise waste, claim 1 defines a seed sensor associated with the seed meter that stops the motor (terminates priming) in response to seed being detected (as having arrived at the seed meter) so that seed is immediately available when planting begins.

3. Construing claim 1

3.1 Claim 1 defines a seeding machine comprising: "a row unit" having, amongst other things, a seed meter. Moreover, a sensor is associated with the seed meter. The opposition division (see impugned decision, point 2.1) found claim 1 to define a seeding machine with a plurality of row units and that each had a seed meter with which a sensor was associated. The Board disagrees with the latter part of this finding.

The Board considers it implicit that the seeding machine of claim 1 has a plurality of row units. However, the claim only specifies the components of one

of these row units, and that a sensor is associated with the seed meter of this row unit.

In the absence of any claim feature relating to any other row unit, the Board considers that it is not implicit that they are all the same, let alone that more than the one of them has an associated sensor. In its most general reading, claim 1 thus defines just one row unit to have an associated sensor.

- 3.2 In accordance with established jurisprudence (see CLBA II.A.6.1), when construing the claim, *only* those interpretations that are technically illogical should be excluded. A mind willing to understand does not require that a [technically logical] broad term needs to be interpreted more narrowly (see for example T1408/04, reasons 1).
- 3.2.1 In the present case, it is true that the detailed embodiment (see for example paragraph [0019] with figure 4) has a seed sensor associated with *each* row unit to detect when seed has arrived at each one. However, the Board agrees with the appellant-opponent that the skilled person would also realise that a single sensor associated with a representative row unit would also be able to signal the completion of priming. Therefore, the above broadest reading of claim 1, with just one sensor associated with seed meter of the one row unit, is logical and makes technical sense, whether or not more sensors would provide a further advantage.
- 3.3 Therefore, following the approach outlined above, the Board holds that the claim is to be interpreted, in its broadest sense, as defining just one sensor associated with the seed meter of the one row unit explicitly mentioned in the claim.

4. Claim 1 of the sole request (as granted), inventive step starting from D1 with D2

4.1 D1 discloses a seeding machine (see the embodiment "Pflanzmaschinen", paragraphs [0076] to [0082]) that moves over soil in a planting operation when planting seed.

The machine (see paragraph [0076]) distributes seed to individual chambers (Kammern). Each of these is immediately above an associated trench opener (Bodenaufbrechvorrichtung) that has an individual seed meter in the form of a rotating singulator disc (Vereinzelungsscheibe).

Therefore, D1 discloses a plurality of row units, a row unit having a trench opener and a seed meter.

4.2 In the Board's view, it is implicit that the rotating singulator disc is driven by a motor forming part of the row unit. In this respect (see paragraph [0070] and figure 6), for a seeding machine as claimed (Pflanzmaschine), just as for the other machines disclosed in D1, the microprocessor 30 controls a driving mechanism 20 (Antriebsmechanismus). This driving mechanism rotates the seed singulator (Vereinzelter [sic]), that is the seed meter.

As explained in detail for this embodiment (see paragraph [0076]), each row unit, with its chamber and trench opener mounted directly below, has a singulator disc (Vereinzelungsscheibe). At least the one shown in figure 6 is directly rotated by the driving mechanism 20 in a closed speed control loop, its detected speed being fed back to the microprocessor (see paragraph [0070]).



In the Board's view, such an electronic speed control of a singulator disc can only be achieved by a motor directly driving that disc. If, on the contrary the driving mechanism 20 were a shaft driven by a remote motor as the respondent-proprietor has speculated, the shaft's speed of rotation could not be regulated by the microprocessor 30 nor therefore could the latter control the singulator in a closed control loop as figure 6 shows. Therefore, whether or not it was usual at the publication date of D1 to mechanically drive a plurality of seed meters via a shaft from a single motor as the respondent-proprietor has alleged, D1 discloses a row unit having a trench opener, seed meter, and a motor as claimed.

- 4.3 The machine also has a control system (see for example paragraph [0012], "Steuerungsmittel" and paragraph [0070] with figure 6, "Mikrosteuerung 30").
- 4.4 However, it is not disputed that the machine has no seed sensor associated with the seed meter. Nor, therefore that the control system is adapted to stop the motor in response to seed being detected by the sensor detecting seed.

As already explained, the only sensor associated with the seed meter is a speed sensor (see figure 6, sensor 40).

- 4.5 That said, in the Board's view, D1 does disclose that the motor is operated prior to planting (driving) of the seeding machine in a priming operation that fills the seed meter.
  - 4.5.1 D1 explains (see paragraph [0007]) that agricultural product dispensing machines (whether or not ones that

start dispensing after a minimum speed is reached) have the problem of a time lag between starting the distribution mechanism and the product actually being dispensed in the ground. D1 proposes (see paragraph [0011]) to overcome this problem with a primer system (Vorstartanlage).

4.5.2 Priming for a seeding machine (and other machines) is explained in detail in paragraph [0071] with figure 7: If the machine is stationary (der Wagon steht), the microprocessor 30 allows the driving mechanism to operate in a so-called bypass mode. In this mode, product is distributed from a storage tank to the row units at a predetermined rate, regardless of the machine's ground speed. The operator primes the machine by pressing button 35 which starts a timer 37 running for a predetermined time. The driving mechanism (motor) operates in the bypass mode. The operator waits until the predetermined time has expired, at which time the motor is stopped. After this, the machine can begin travelling over the field.

4.5.3 Therefore, in the Board's view, D1 discloses that priming takes place with the machine being stationary and its purpose is to ready the machine such that when beginning a planting operation, seed is ready to be immediately dispensed from the seed meter. This is confirmed in paragraph [0081], second and third sentences, where it is explained that, after expiry of the priming time, when the planter begins travelling in the field, seed is ready to be planted. Therefore, the Board is not convinced by the respondent proprietor's argument that D1 discloses a different priming from that claimed, during which the seed machine is in a bypass mode of operation and moving over the ground at low speeds whilst already planting.

- 4.5.4 In this regard, the fact that the *bypass* mode (constant seed distribution rate independent of ground speed) is also used in situations when the machine is being driven and is planting seed (see paragraph [0061]: for example when the vehicle is backed into a corner) does not negate the fact that D1 discloses a priming operation when the vehicle is stationary and not planting.
- 4.5.5 By the same token, whether or not these other (none-priming) *bypass* modes are accurately reflected in the decision boxes 31 and 33 of figure 7, the priming sequence shown there, with its affirmative of the priming switch pressed query (35) leading to the timer being started (37) and the affirmative of the timer expiry query (Timer abgelaufen[?]) leading to the driving mechanism stopping (Ja: Antriebsmechanismus anhalten) is consistent with the explanation given in paragraphs [0070] and [0081] and described above.
- 4.5.6 Therefore, the Board holds that the subject matter of claim 1 differs from D1 in that the seeding machine has a seed sensor associated with the seed meter and in that when this seed sensor detects seed, the motor is stopped. In other words, the claimed priming operation ends, not as in D1 with the expiry of a timer's preset time, but with the seed sensor sensing seed.
- 4.6 An object of the invention (see published patent specification, paragraph [0010]) is to minimise waste of seed during planting. As already explained, D1 goes some way in achieving this in that it discloses a priming operation that ends when, after lapse of a certain time period measured by a timer, seed *should* have arrived at the dispensing point. In the Board's

view, sensing with a sensor when seed has *actually* arrived at the dispensing point is inherently more reliable.

4.7 Therefore, the objective technical problem can be expressed as how to modify the machine of D1 to improve the reliability of the priming operation.

4.8 Combination of D1 with D2

D2 (see column 1, lines 1 to 23) relates to agricultural machines for distributing, amongst other things, seeds.

4.8.1 It is true that D2 does not relate to a [row] seeding machine as claimed but rather to a spray type seeder where seed is fed from a seed store via a distribution system to sprayers. However, the Board does not share the respondent-proprietor's view that this makes D2's teaching not applicable to solving a problem involving a seeding machine, so the skilled person would not consider combining D1 with D2.

4.8.2 In this regard, the Board notes that the skilled person has their mind focused on solving a problem with the priming operation. They also know from D1 (see D1, paragraphs [0042], [0043] [0070] and [0071] with figures 6 and 7) that the priming process is essentially the same for a row seeding machine and a seed sprayer machine, because priming is merely the pre-filling of the distribution system from the seed storage, irrespective of how the seed is subsequently dispensed.

4.8.3 Therefore, the Board has no doubt that the skilled person would consider combining D1 with the teaching of D2.

4.8.4 Like D1, D2 (see for example the abstract) is concerned with achieving a uniform dispensing of seed at the beginning of planting. To this end D2 discloses (see column 4, lines 21 to 33) providing the operator with a switch for starting the metering of seed. A display device signals a preset period of time from the time of activating, during which, material [seed] to be dispensed is conveyed at a constant speed. In other words, D2 discloses an operator initiated priming which ends, not with the stopping of seed distribution, but with an indication to the operator [that the seed sprayer is primed and planting can begin].

4.8.5 The description continues (see column 4, lines 34 to 48) by explaining that to prime more securely, which can but mean more reliably, instead of signalling when a preset time has expired, the distributor is provided with a sensor to sense the flow of seeds arrival and signal this to the operator.

In the light of this teaching, when faced with the objective technical problem (improving priming reliability), the Board holds that the skilled person would, as a matter of obviousness, modify D1's planter by substituting its timer for a seed sensor at the point of seed dispensing (seed meter).

4.8.6 In this regard, the Board is not convinced by the respondent-proprietor's argument that the skilled person would not make this substitution because in D2 the motor is not stopped at the end of priming. In the Board's view, it lies within the skilled person's

normal skills of comprehension and abstraction to recognise D2's teaching that a seed sensor can be used to more reliably detect when a seed dispensing machine is primed, irrespective of the detection merely being used to indicate this to the operator.

- 4.8.7 The respondent-proprietor has also argued that the combination of D1 and D2 does not take away inventive step of claim 1, because D2 discloses a single sensor detecting seed arriving at a single dispenser (sprayer) so its teaching would not lead the skilled person to a machine where a plurality of row units were *individually* controlled and provided with respective individual sensors. Irrespective of the correctness of the latter reasoning, as has already been explained, in its broadest scope claim 1 defines just one sensor associated with the one row unit explicitly defined in the claim. In other words, claim 1 is not limited to the individual control of a plurality of row units. Therefore, the above argument is not relevant.
- 4.9 The Board concludes that the subject matter of claim 1 lacks inventive step starting from D1 in combination with D2.
5. In view of this conclusion, the sole request of the respondent-proprietor must fail. Therefore, the Board must revoke the patent.

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



D. Hampe

J. Wright

Decision electronically authenticated