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D E C I S I O N
of 2 December 1994

Case Number: T 1064/92 - 3.2.4

Application Number: 84200429.3

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IPC: A01F 15/00

Language of the proceedings: EN

Title of invention:
Agricultural balers

Patentee:
FORD NEW HOLLAND N.V.

Opponent:
Maschinenfabriken Bernhard Krone GmbH

Headword:
Baler/FORD NEW HOLLAND

Relevant legal provisions:
EPC Art. 54, 56

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

Decisions cited:
-

Catchword:
-



Case Number: T 1064/92 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 2 December 1994

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dispatched on
23 October 1992 rejecting the opposition filed
against European patent No. 0 120 545 pursuant to
Article 102(2) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: P. Petti
J. P. B. Seitz

Summary of Facts and Submissions

I. The opposition against the European patent No. 120 545 was rejected by the Opposition Division in its decision dispatched on 23 October 1992.

The opposition was mainly based on the following documents:

D1: US-A-4 121 513

D2: EP-A-0 035 114

II. The wording of Claim 1 of the patent as granted reads as follows:

"1. A round baler for forming cylindrical bales of crop material comprising:

a fixed, main frame portion;

a rear, tailgate portion (12) pivotally mounted on the main frame portion;

first, driven bale-forming means (9) supported on the tailgate portion (12) and complementary, driven bale-forming means (8) supported on the main frame portion; said first bale-forming means (9) being separate from the complementary bale-forming means (8) and comprising endless flexible conveyor means having an expandable operative run (70) extending between upper and lower guide means (49, 51) and facing said complementary bale-forming means (8) in front thereof to delimit together therewith an expandable bale chamber (11, 11'); said operative run (70), when the bale chamber (11) is empty, extending along a straight, generally upright line between said upper and lower guide means (49, 51) to delimit together with the complementary bale-forming means (8) a generally

elongated and generally upright bale starting chamber (11) having its centre positioned forwardly of said straight line, and, during bale formation, being expandable in a direction away from said complementary bale-forming means (8) and outwardly between said guide means (49, 51) to extend along a curved line therebetween to delimit, in part, a generally cylindrically shaped full size bale chamber (11') when a bale being formed therein (11') reaches its maximum size, and said upper and lower guide means (49, 51) being disposed at fixed positions generally at the upper, respectively the lower end of the full size bale chamber (11'), and

separate take-up and tensioning means (52-59) operatively associated with the endless flexible conveyor means of the first bale-forming means (9) for resiliently urging the operative run (70) thereof towards its straight line position when the bale chamber (11) is empty and permitting said operative run (70) to expand, opposite to resilient forces, towards its curved line position when a bale is being formed in the bale chamber (11'), and

characterized in that

when the bale chamber (11') has reached its full size, the operative run (70) of the first bale-forming means (9) defines, in its entirety, a portion of the circumference of the full size bale chamber (11') which is substantially larger than the portion of the circumference of said full size bale chamber (11') defined by the complementary bale-forming means (8); the arrangement being such that, during bale formation, the centre of the bale chamber (11, 11') shifts from a position in front of said straight line to a position to the rear thereof."

III. On 1 December 1992 the Appellant (Opponent) lodged an appeal against this decision and simultaneously paid the appeal fee. A statement setting out the grounds of appeal was received on 2 March 1993.

IV. Oral proceedings were held on 2 December 1994.

The Appellant essentially argued that the subject-matter of Claim 1 was not novel with respect to the content of document D1. He also argued that the subject-matter of Claim 1 did not involve an inventive step with respect to documents D1 and D2.

The Respondent (Proprietor) essentially contested the Appellant's arguments.

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

The Respondent requested that the appeal be dismissed and the patent be maintained as granted. He also made an auxiliary request based on an amended Claim 1.

Reasons for the Decision

1. The appeal is admissible.

2. *Identification of the subject-matter of Claim 1*

Claim 1 contains the following expressions which need to be interpreted in order to identify the subject-matter for which protection is sought and thus to compare this subject-matter with the prior art:

- (a) The expression in Claim 1 "expandable operative run" defines a portion of the endless flexible conveyor means forming the first driven bale-forming means which (portion) extends between upper and lower guide means and defines a portion of the bale chamber. The "expandable operative run" extends along a straight line (i.e. in a plane) between upper and lower guiding means when the bale chamber is empty and, when the bale chamber is at its full size, defines a portion of circumference which extends between upper and lower guiding means. In other words, the "expandable operative run" is that portion of the endless flexible conveyor means between the fixed upper and lower guiding means which defines, in its entirety, a portion of the bale chamber not only when the bale chamber has reached its full size but also when the bale chamber is empty, as well as during formation of the bale. Thus, the bale chamber is always delimited (be it empty or full) - as explicitly stated by the Respondent during the oral proceedings - "by the whole extent between the fixed upper and lower guiding means of the operative run of the endless flexible conveyor means".
- (b) The expression "straight, generally upright line" must be construed as a "straight line" which extends "generally upright". The term "straight line" (e.g. Claim 1, column 18, line 21) defines not only the straight line (i.e. the plane) in which the operative run of the endless flexible conveyor means extends when the baling chamber is empty but also the imaginary straight line extending between upper and lower guiding means when the bale chamber has reached its full size.

- (c) The expression "generally upright bale starting chamber" must be construed in combination with the expression "generally elongated bale starting chamber".

3. *Novelty*

- 3.1 Document D2 discloses a round baler according to the preamble of Claim 1. In particular, this known round baler is provided with an expandable bale forming means having an operative run (13) which extends - when the bale chamber is empty - along a straight, generally upright line between upper (15) and lower (17) guide rollers, the starting chamber being elongated and generally upright (see Figures 1 and 3A), the upper (15) and lower (17) guiding rollers being both disposed at fixed positions at the upper and the lower end respectively of the full size bale chamber.
- 3.2 Document D1 discloses (see particularly Figures 1 and 2) a round baler for forming cylindrical bales of crop material comprising a fixed main frame portion (front part of the chassis 22), a rear tailgate portion (rear part of the chassis 22) pivotally mounted on the main frame portion (see particularly column 5, lines 54 to 58), a first driven bale forming web (40) supported on the tailgate portion and a complementary driven bale forming web (60). The first driven bale forming web (40) is separate from the complementary driven bale forming web and comprises flexible belts (42) having an expandable operative run (web stretch 38). When the bale chamber is empty, the expandable operative run (38) extends between a lower roller (54) disposed at a fixed position generally at the lower end of the full size bale chamber and a first upper roller (66) connected to a retainer (82). The expandable operative run (38) faces said complementary driven bale forming web (60) in front

thereof to delimit together therewith an expandable bale chamber (30) and extends, when the bale chamber is empty, along a straight, generally upright line between the lower guide roller (54) and the first upper roller (66) to delimit together with the complementary driven bale forming web (namely with the web stretch 58) a generally elongated bale starting chamber having its centre positioned forward of the straight line extending between said lower guide roller (54) and said first upper roller (66). During bale formation, said operative run expands in a direction away from said complementary driven bale forming web (60) and outwardly between said lower guide roller (54) and said first upper roller (66) to extend along a curved line between these rollers. When the operative run (38) has reached its full expansion, it extends along a curved line between said lower guide roller (54) and a second upper roller (88) also connected to the retainer (82) to delimit, in part, a generally cylindrically shaped full size bale chamber. The baler also comprises a take-up and tensioning assembly (118) associated with the endless belts (42) of the first bale forming web (40) for resiliently urging the operative run (38) towards a straight line position when the bale chamber is empty and permitting said operative run (38) to expand, opposite to resilient forces, towards a curved line position when a bale is being formed in the bale chamber. Moreover, when the bale chamber has reached its full size, the operative run (38) defines, in its entirety, a portion of the circumference of the full size bale chamber which is larger than the portion defined by the complementary driven bale forming web. The arrangement of the bale forming web is such that, during bale formation, the centre of the bale chamber shifts towards the rear of the baler. In this known baler, the elongated bale starting chamber is generally horizontal (column 3, lines 47 to 50; column 5, lines 49 and 50).

This known baler is provided with a retainer (82) movable from a position at the lower end of the full size bale chamber to a position at the upper end of the full size bale chamber, the retainer carrying two rollers (66 and 88) which act as guiding rollers for the operative run (38). Therefore, since the web stretch (38) of the baler according to document D1, which corresponds to the "expandable operative run" of the baler according to Claim 1, does not extend between two fixed guiding means, the content of document D1 does not deprive the subject-matter of Claim 1 of novelty.

- 3.2.1 The arguments with which the Appellant objected to the novelty of the subject-matter of Claim 1 are based upon an analysis of document D1 according to which the operative run (38) of the baler described in document D1 extends between the lower guide roller (54) and the upper guide roller (44), wherein both rollers (44 and 54) are fixed.

The Board cannot accept these arguments because they are based on an analysis of document D1 which is not consistent with the interpretation criteria of Claim 1 as set out in Section 2 above and based on the content of the European patent.

In any case, even if the comparative analysis of Claim 1 with respect to the baler according to document D1 were to be made by comparing the fixed upper and lower guide means according to Claim 1 with the rollers (54) and (44) of the baler according to document D1, the novelty of the subject-matter of Claim 1 would not be destroyed by the known baler, because the operative run (38) of the baler according to document D1 does not extend along a straight line between these upper (44) and lower (54) rollers when the bale chamber is empty (see Figure 1).

3.3 Therefore, the subject-matter of Claim 1 is novel with respect to each of documents D1 and D2.

4. *The prior art closest to the invention*

The Board and the parties consider document D2 as reflecting the closest prior art.

Both the baler according to document D2 and the baler according to Claim 1 use the whole extent between the fixed upper and lower guide means of that portion of the endless flexible conveyor means for the expansion of the bale chamber (see Section 2(a) above), such that the bale chamber expands mainly in horizontal direction.

On the contrary, in the baler according to document D1 the bale chamber not only expands in horizontal direction but also, due to the movement of the retainer 82, in a vertical direction.

5. *The technical problem and its solution*

5.1 Both bale forming means (13 and 14) of the baler according to document D2 define, when the bale chamber has reached its maximum size, two portions of circumference having substantially the same length. The discharge of the bale is attained thanks to the tension in the flexible endless conveyor (14) forming the complementary bale-forming means (see particularly page 8, lines 21 to 26).

The bale starting chamber is generally triangular in shape and is oriented generally vertically. The flexible endless conveyors (13 and 14) do not exert any pressure on the bale in formation until the bale has reached a size causing the expansion of the bale chamber. In other words, the expansion of the bale chamber begins only

when the bale has reached a certain diameter which can be defined as the "expansion start bale diameter". The bales manufactured by this known baler have therefore a relatively soft core corresponding to the phase of the manufacturing process in which the flexible endless conveyors do not exert any pressure on the bale and a zone concentric with that core, this zone having a relatively high density.

- 5.2 The subject-matter of Claim 1 is distinguished from the closest prior art by the features specified in the characterising portion of the claim.

The first characterising feature defines a dimensional relationship between the portions of the full size bale chamber defined by the first and the complementary bale-forming means respectively, namely that the portion defined by the first bale-forming means is larger than that defined by the complementary bale-forming means.

The second characterising feature concerns the shifting of the centre of the bale chamber towards the rear of the baler, namely behind an imaginary straight line which is clearly defined in the preamble of the claim.

- 5.3 Both characterising features of Claim 1 result in that the centre of gravity of the bale, when the bale has reached its maximum size, lies within the rear portion of the bale chamber, such that there is a natural tendency for the bale to roll from the machine on the raising of the tailgate portion (automatic discharge).

Indeed, by requiring that the portion of the circumference of the full size bale chamber delimited by the operative run of the first bale-forming means is larger than that portion delimited by the complementary

bale-forming means, and due to the fact that the first portion (of the first bale-forming means) is and must always be located between the fixed upper and lower guide means, it is clear that the centre of the bale chamber will be located within the volume defined by the guide means and the first portion of the first bale-forming means, and this even more so if the relation between that first (first bale-forming means) and second (complementary bale-forming means) portions increases.

During the oral proceedings the Respondent pointed out that the characterising features of Claim 1 also result in the dimensions of the starting bale chamber being able to be reduced with respect to those of the closest prior art. In other words, the driven bale-forming means of the baler according to Claim 1 are arranged such that the expansion of the bale chamber can begin when the bale has reached a diameter less than the "expansion start bale diameter" of the baler according to the closest prior art. This would lead to the formation of bales having a more compact core.

5.4 The main aspect of problem to be solved can be seen as to improve the baler with respect to the discharge of the formed bale.

6. *Inventive step*

6.1 Document D1 is not concerned with the problem of improving the discharge of the baler. The description of document D1 only mentions that "the rear part of the chassis [of the baler] ... may be swung as a unit about a pivot not shown [in the drawings] for the purpose of permitting discharge of the bale" (see column 5, lines 54 to 58). In this context, it must be considered

that the expression "permitting the discharge" does not imply a natural tendency of the bale to roll out of the baler (automatic discharge).

Figure 2 of document D1 shows a schematic, vertical cross-sectional view of the baler in the condition in which the bale has reached its full size.

Although it can be derived from this Figure that in this condition the portion of circumference defined by the rear bale-forming means (38) is larger than the portion of circumference defined by the complementary bale-forming means (58), neither the description nor the claims of document D1 contains any explicit information concerning a dimensional relationship between these portions of circumference.

Furthermore, neither does Figure 2 show the position of the centre of the bale chamber nor does the description of document D1 mention such a centre, let alone a shifting of this centre during bale formation.

Therefore, the skilled man would not derive from document D1 either the features which represent the solution of the technical problem or a link between the dimensional relationship between the two portions of circumference shown in Figure 2 and the technical problem. In other words, document D1 does not contain an unequivocal teaching of how to arrange the two bale-forming means with respect to the position of the bale chamber in order to improve the discharge of the bale.

6.2 The Appellant asserted that the skilled person would derive from the figurative representation of the baler according to Figure 2 of document D1 not only the dimensional relationship between the portions of

circumference delimited by both bale-forming means as defined by the first characterising feature of Claim 1 but also the shifting of the centre of the bale chamber as defined by the second characterising feature of Claim 1 and that he would immediately realize that these features permit the improvement of the bale discharge.

The Board cannot accept this argument which represents a ex post facto analysis of document D1. Firstly, since Figure 2 does not show any centre of the full size bale chamber, this centre must graphically be determined on this Figure which represents however a "schematic view" (see column 2, lines 17 to 23). Secondly, a "straight line" must be theoretically identified in the baler according to Figures 1 and 2 of document D1 in order to compare this "straight line" with the "straight line between the fixed upper and lower guide means" as defined in Claim 1. Then, this "straight line" must be graphically determined on Figure 2 in order to establish the position of the centre of the bale chamber with respect to this "straight line". In this context, it must be considered that the upper guiding means of the operative run (38) of the rear bale-forming means of the baler according to D1 mounted on the retainer (82) consists of two guiding rollers (88 and 66) such that there is no certainty as to the identification of the "straight line". Thirdly, even if it were assumed that Figure 2 shows a bale whose gravity center is positioned in the rear part of the baler, it would be unlikely that the skilled person would immediately realize that an automatic discharge of the bale at the swinging of the rear part of the chassis of the baler shown in Figure 2 could be caused by the fact that the gravity centre of the bale is shifted towards the rear, because he could also assume that the automatic discharge of the bale was dependent upon the tension existing in the operative run (58) of the front bale-forming means.

6.3 Therefore, the subject-matter of Claim 1 involves an inventive step with respect to the prior art reflected by documents D2 and D1.


7. The patent can therefore be maintained as granted according to the Respondent's main request. Therefore there is no need to consider the Respondent's auxiliary request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:



N. Maslin

The Chairman:



C. Andries

