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**Datasheet for the decision  
of 13 November 2013**

**Case Number:** T 0865/09 - 3.5.04

**Application Number:** 98965328.2

**Publication Number:** 1038266

**IPC:** G06T1/00, A01J5/017, B25J19/02

**Language of the proceedings:** EN

**Title of invention:**  
Device for performing automatic teatcup attachment

**Patent Proprietor:**  
DeLaval Holding AB

**Opponent:**  
Octrooibureau Van der Lely N.V.

**Headword:**

**Relevant legal provisions:**  
EPC 1973 Art. 54, 56

**Keyword:**  
Novelty - after amendment (yes)  
Inventive step - after amendment (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
Boards of Appeal  
Chambres de recours**

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Case Number: T 0865/09 - 3.5.04

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.04**  
**of 13 November 2013**

**Appellant:**  
(Patent Proprietor)

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**Respondent:**  
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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted on 19 February  
2009 revoking European patent No. 1038266  
pursuant to Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairman:** F. Edlinger  
**Members:** A. Dumont  
C. Vallet

## Summary of Facts and Submissions

- I. The patent proprietor appealed against the decision by the opposition division revoking European patent No. 1 038 266.
- II. An opposition had been filed on the grounds that the subject-matter of all granted claims lacked novelty and inventive step over the following prior-art document:  
  
D1: EP 0 360 354 B1.
- III. The opposition division further referred to the following prior-art documents:  
  
D2: US 5 219 264 A and  
D3: WO 97/15900 A1.
- IV. The opposition division decided that the subject-matter of claim 1 according to all the requests then on file met the requirements of Articles 123(2) and 54 EPC but lacked inventive step within the meaning of Article 56 EPC over a combination of apparatuses disclosed in D1 with D3.
- V. In the statement of grounds of appeal the patent proprietor requested that the patent be maintained as granted or in amended form according to one of the first to third auxiliary requests underlying the decision under appeal.
- VI. The respondent in reply requested that the appeal be dismissed. It contested the appellant's interpretation of the claims, and raised objections of lack of novelty, lack of inventive step in view of D1 and D3,

but also D1 and D2, and, lastly, of added subject-matter.

- VII. In a communication accompanying the summons to oral proceedings the board informed the parties that they should be prepared to discuss the amendments' compliance with Article 84 EPC 1973 and Article 123(2) EPC, as well as novelty and inventive step.
- VIII. In reply, the respondent announced by letter dated 18 September 2013 that it would not be attending the oral proceedings before the board and requested a decision on the basis of the written submissions on file.
- IX. In those oral proceeding of 13 November 2013, the appellant withdrew the requests submitted in writing and filed amended columns 1 to 5 of the description and claims 1 to 5 according to a new main (and sole) request.
- X. The appellant requested that the decision under appeal be set aside and that the patent be maintained as amended according to the sole request submitted in the oral proceedings, and the drawings of the patent specification. The respondent had requested in writing that the appeal be dismissed.
- XI. Claim 1 according to the main request reads as follows:
- "An apparatus for performing teatcup attachment on milking animals, having a device for gripping a teatcup intended to be attached to a teat, said device having a base portion (2) which is adapted to be connected to a robot arm (3a) and comprises a gripper portion (4) joined to a connector portion (3), and an image

capturing means (5) provided with a housing (6) and a lens (7) having a viewing axis (7a), said image capturing means (5) being mounted on said base portion (2), characterised in that the housing (6) of said image capturing means (5) is rigidly mounted on one of either the gripper portion (4) or the connector portion (3), the gripper portion (4) being arranged to grip a teat cup so that the viewing axis (7a) crosses a coaxial axis of the teat cup, and in that alteration means (13, 14, 15) are provided for allowing said viewing axis (7a) to be altered, wherein said alteration means (13, 14, 15) comprises a hinge means (13, 15) and a driving means (14) for allowing said image capturing means (5) to be pivoted about said hinge means."

XII. The reasons for the decision under appeal may be summarised as follows:

The apparatus of claim 1 is novel and differs from the apparatus known from document D1 by comprising image capturing means as a substitute for the sensor means of D1. Replacing sensor means comprising moving parts by less costly (two-dimensional) image capturing means, such as the camera disclosed in document D3, would be a logical choice. Furthermore, opting for a robot arm carrying a single teatcup as taught by D3 instead of the arm carrying four teatcups as in D1 was a mere design choice. The apparatus of claim 1 thus lacked inventive step over a combination of D1 with D3.

XIII. An *obiter dictum* in the decision under appeal may be summarised as follows:

It would be immediately obvious, for the skilled person confronted with the problem of occluded teats in the

apparatus of D3, to provide extra degrees of freedom (by a supplementary hinge on the robot arm, together with an appropriate motion control).

XIV. The appellant's arguments may be summarised as follows:

The parts in D1 having the same function as the image capturing means of the present invention are moving and complex. Furthermore, the robot arm of D1 is complex in that it is constructed to provide both axial and rotational movements of the robot end, which movements are necessary for attaching all four teatcups.

The technical problem may be formulated as providing a simple arrangement enabling reliable teat detection and teatcup attachment. The system of D3 is not practical for the robot of D1. D1 and D3 propose completely different and distinct solutions to the problem of teat detection and teatcup attachment, with D1 relating to a robot arm carrying all four teatcups in a magazine and D3 relating to a robot arm fetching a single teatcup at a time from a fixed magazine. Replacing the sensor means of D1 by the camera of D3, which would also require adaptation of the control and image analysis, would result from hindsight. Furthermore, it would not be obvious to modify the robot arm of D1 to carry a single teatcup, since the complex assembly assuring axial movement would then be rendered redundant. The skilled person designing a robot arm carrying a single teatcup, as in the invention, would never have considered D1 in the first place.

The board should disregard the *obiter dictum* in the decision under appeal as well as the late objection of lack of inventive step relying on a combination of documents D1 and D2.

The camera in the apparatus of D3 starts teat detection from below the teat, thus avoiding the problem underlying the present invention of having to "look around" a teat possibly obstructing the view. It would thus not be obvious to add a hinge at the end of the robot arm of D3.

D2 relates to a high-precision industrial robot relying on beacons and thus not suitable for attachment to a teat which has no well-defined position relative to a fixed point.

XV. The respondent's arguments may be summarised as follows:

D1 discloses image capturing means within the meaning of claim 1 since the receiver element is two-dimensional and since some kind of image must be captured by the sensor means. Furthermore, during the scanning movement, the viewing axis of the rotating sensor means crosses the axis of the teatcups. The apparatus according to claim 1 of the third auxiliary request underlying the impugned decision thus lacks novelty over D1.

Modernising the apparatus of D1 by replacing its complex rotating sensor means with a well-known robot arm mounted camera as known from D2 would also be obvious.

## **Reasons for the Decision**

1. The appeal is admissible.
2. Amendments
  - 2.1 The amendments were made in response to the discussion of the appellant's requests in the oral proceedings. They essentially combine the subject-matter of claims 1 and 2 of the third auxiliary request. As will be shown below, this limitation is appropriate to clarify the contested meaning of the viewing axis crossing the axis of the teatcup. Since this amendment was straightforward and narrowed down the subject-matter dealt with by the opposition division, the board considered that the appellant should not be put in a less favourable situation than if the respondent had attended the oral proceedings, and thus admitted this amendment to the patent proprietor's case pursuant to Article 13(1) RPBA.
  - 2.2 The respondent did not object to the claims of the third auxiliary request under Article 123(2) EPC or Article 100(c) EPC. The board is satisfied that the subject-matter of claim 1 according to the present sole request does not extend beyond the content of the application as filed. It was also not contested that the said claims comply with Article 84 EPC. The same applies to the dependent claims.
  - 2.3 The description was amended in the appeal proceedings to acknowledge document D1 (Rule 27(1)(b) EPC 1973) and to clarify that the described "fourth embodiment" (Figures 4A to 4C) is excluded from the invention (Rule 27(1)(c) EPC 1973).



3. Novelty (Article 54 EPC 1973)

3.1 Novelty of the subject-matter of present claim 1 was not contested by the opposition division. Nor was it explicitly contested by the respondent.

3.2 However, the respondent objected that the apparatus according to claim 1 of the third auxiliary request underlying the impugned decision lacked novelty over document D1. This objection, at least, does not apply to present claim 1. In D1, a stepper motor makes the sensor means (51 in Figure 4) rotate with an angle of approximately  $120^\circ$  (see column 9, lines 22 to 31). Thus D1 does not disclose the housing of an image capturing means being rigidly mounted on one of either the gripper portion or the connector portion, as set out in present claim 1.

3.3 Novelty over D2 or D3 is not contested.

3.4 In conclusion, the subject-matter of claim 1 is novel over the cited prior-art documents.

4. Inventive step (Article 56 EPC 1973)

4.1 The apparatus of claim 1 differs from the apparatus of D1 by the image capturing means. In D1 the sensor means (51) rotates so as to temporarily cross all four vertical axes of the teatcups (45 to 48 in Figure 4) during operation.

4.2 If the sensor means of D1 were replaced by a less costly (two-dimensional) image capturing means, such as a solid-state camera (17) rigidly mounted on the gripper portion disclosed in document D3, those means would most likely point in the direction of the axial

movement of the gripper portion (38 in Figure 2; see also column 8, lines 30 to 32), i.e. between the four teatcup axes, in order to be able to simultaneously view all four teatcups. In that case the viewing axis would not cross a vertical axis of any teatcup.

- 4.3 Claim 1 sets out that the housing of the image capturing means is rigidly mounted and that the viewing axis (of its lens) crosses a (vertical) coaxial axis of the teatcup. This structurally limits the robot arm to a type where a single teatcup at a time is carried on the robot arm. This type is fundamentally different from the type with a four-teatcup carrying portion according to D1. Contrary to the single-teatcup type according to the present invention or according to D3, the D1 type necessitates more degrees of freedom for placing all four teatcups. In D1, hinge means (pivot pin 35) and an axial slide (see column 8, lines 30 to 44) are provided for rotation and axial movement respectively.
- 4.4 Thus, starting from D1, arriving at the invention would necessitate transforming the robot arm of the four-teatcup type into a robot arm of the single-teatcup type, i.e. substantially modifying its construction and its control mechanism. This approach is considered by the board as counter-intuitive, and thus non-obvious.
- 4.5 Before deciding to maintain a patent in an amended form, the board has to examine whether it meets the requirements of the EPC (Articles 101(3)(a) EPC and Article 111(1) EPC 1973), taking into account, in the present case, also the objection raised in the *obiter dictum* in the decision under appeal.

Arriving at the invention starting from D3 would necessitate adding a hinge on the robot arm. This solution is not suggested in D3, which is silent about the mechanical construction of the arm. The board agrees that the skilled person would be aware that a supplementary hinge in principle allows an extra degree of freedom on a robot arm. However, this comes at a cost of added complexity in terms of mechanical construction and motion control. The skilled person would thus need a concrete reason to add such a hinge. In the board's view, the problem of occluded teats does not necessarily arise in D3, where the teats are illuminated from below and the camera is mounted on a teatcup carrier with a viewing axis forming an angle with the plane of the sheet of light (see page 7, lines 16 to 22 and Figure 1). The board is not aware of another technical problem which would prompt the skilled person to add a hinge to the robot arm of D3. Thus, starting from D3, arriving at the invention would also not be obvious.

- 4.6 Document D2 was cited in the opposition proceedings and in the appealed decision. It thus belongs to the factual framework of the opposition and appeal proceedings and is considered by the board. D2 relates to a CCD camera, as an image capturing means, mounted on the arm of a mobile industrial robot with high accuracy requirements and suitable for manufacturing small and delicate parts, such as integrated circuits (see column 1, lines 17 to 30). The robot is clearly not suitable to be adapted as a milking robot. D2 is thus regarded as less relevant than either D1 or D3.
- 4.7 It follows from the above that the subject-matter of claim 1 involves an inventive step over the available prior art.

4.8 The board is thus satisfied that, taking into account the amendments made by the patent proprietor, the patent and the invention to which it relates meet the requirements of the EPC.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:

Description:

Columns: 1 to 5 received during oral proceedings of 13 November 2013;

Claims:

Nos: 1 to 5 received during oral proceedings of 13 November 2013;

Drawings:

Pages: 6 to 11 of the patent specification.

The Registrar:

The Chairman:



K. Boelicke

F. Edlinger

Decision electronically authenticated