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**Datasheet for the decision  
of 20 March 2020**

**Case Number:** T 0800/17 - 3.2.04

**Application Number:** 12715731.1

**Publication Number:** 2685810

**IPC:** A01J5/017

**Language of the proceedings:** EN

**Title of invention:**

HUMAN ASSISTED MILKING ROBOT AND METHOD

**Applicant:**

Mirobot Ltd.

**Headword:**

**Relevant legal provisions:**

EPC Art. 54, 56, 123(2)

RPBA 2020 Art. 11

**Keyword:**

Amendments of application - allowable (yes)

Novelty - main request (yes)

Inventive step - main request (yes)

Remittal to the department of first instance - (no)

**Decisions cited:**

**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 0800/17 - 3.2.04

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.04**  
**of 20 March 2020**

**Appellant:** Mirobot Ltd.  
(Applicant) Toyota Tower  
Yigal Alon Street 65  
67443 Tel-Aviv (IL)

**Representative:** Metten, Karl-Heinz  
Boehmert & Boehmert  
Anwaltspartnerschaft mbB  
Pettenkoferstrasse 22  
80336 München (DE)

**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 6 September  
2016 refusing European patent application No.  
12715731.1 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** A. de Vries  
**Members:** S. Hillebrand  
T. Bokor

## **Summary of Facts and Submissions**

- I. The Applicant, now Appellant, appeals against the decision of the Examining Division of 6 September 2016 to refuse the European patent application EP 12 715 731.1 (Article 97 (2) EPC), since the subject-matter of the method claim according to the sole request on file extended beyond the content of the application as originally filed (Article 123(2) EPC).
- II. The notice of appeal and the appeal fee were filed on 4 November 2016. The statement of the grounds of appeal was filed on 12 January 2017.
- III. In a phone conversation on 4 October 2019, the Rapporteur of the Board informed the Appellant of certain remaining objections with regard to the main request. In response the Appellant filed with letter of 6 January 2020 a new main request.
- IV. In the present decision, reference is made to the following documents:  
D1: US 2010/0186675 A1  
D2: US 5 697 324 A.
- V. The Appellant requests that the decision of the Examining Division be set aside and a patent be granted on the basis of the main request as filed on 6 January 2020 or on the basis of one of auxiliary requests I - III submitted with the statement of the grounds for appeal.

VI. The independent claims of the main request read as follows.

1. "A milking robot (300) for operating milking equipment (600) comprising:  
a location computation unit (125) adapted for locating at least one teat (20) for milking;  
at least one robotic arm or robotic platform (55) adapted for maneuvering milking equipment (600);  
a motion control unit (120) adapted for controlling movement of the at least one robotic arm or robotic platform (55); and  
a controller (135) for controlling operation of the milking robot (300) and the milking equipment (600), wherein the controller (135) is adapted to operate in one of an automated mode of operation and a human assisted mode of operation and to switch from the automated mode of operation to the human assisted mode of operation in response to failure to perform a task, and  
wherein the controller (135) is adapted to communicate with a control device (500) that is human operated to receive input from the control device (500) that is human operated during the human assisted mode, and to control the location computation unit (125) based on the input received from the control device (500) that is human operated."

10. "A method for performing milking tasks on a dairy animal (104) with a milking robot (300), the method comprising:  
operating a milking robot (300) in an automated mode without human intervention, wherein the milking robot (300) is adapted to perform milking tasks on a dairy animal;  
computing a location of teats (20) for milking;  
detecting failure in performing the milking task,

wherein the failure is detected by the milking robot (300);  
switching operation of the milking robot (300) from the automated mode of operation to a human assisted mode of operation in response to detecting the failure;  
transmitting information from the milking robot (300) to a control device (500) that is operated by a human supervisor (200);  
receiving input from the control device (500) that is operated by a human supervisor (200) responsive to the information transmitted; and  
completing the milking task with the milking robot (300) based on the input received from the control device (500) operated by a human supervisor (200), wherein the input received from the control device (500) to complete the milking task includes input for correcting the computed location of the teats (20) for milking."

VII. The Appellant's arguments can be summarised as follows.

The subject-matter of the independent claims corresponds to the subject-matter of original claims 30 and 48, respectively, which had already been acknowledged as being new and involving an inventive step in the Written Opinion of the International Search Authority (WOISA) in section 3.

## Reasons for the Decision

1. The appeal is admissible.
2. The patent application deals with milking robots and a method of performing milking tasks with a milking robot.  
The milking tasks are normally executed automatically. Upon detection of a problem or failure, a warning is issued to allow human intervention. According to the invention, human assisted operation consists in particular in providing corrective input with regard to the location of a milking teat, which has been computed beforehand by the control unit and is then corrected based on the human input.
3. **Main request - Added subject-matter**
  - 3.1 Claims 1 to 15 are based on claims 26 to 52 of the international patent application as explained in the statement of grounds on page 3 and 4. In particular claim 1 is based on original claims 26, 27, 29, 30, 39 and claim 10 on original claims 44, 48.
  - 3.2 In its decision the Examining Division held that the independent method claim had been unallowably amended by the addition of two features ("Amendment (1)" and "Amendment (2)") vis-a-vis original claim 44. The Applicant has overcome this objection by omitting both amendments in independent method claim 10 and reinstating the wording of original claim 44, in particular (emphasis by the Board)  
- "... adapted to locate at least one teat (20) of a dairy animal (104) for milking and to perform a milking tasks on the at least one teat (2) a dairy animal" and

- "... transmitting information from the milking robot to a control device (500) that is operated by a human supervisor (200) ~~during the human-assisted mode of operation~~".

Furthermore, method claim 10 contains the features of original claim 48: "wherein the input received from the control device (500) to complete the milking task includes input for correcting ~~a~~ the computed location of the teats (20) for milking". Since computation of the location of the teats must have been taken place before the computed location can be corrected, the Board considers the introduction of a corresponding method step using the terminology of original claim 48 ("computing a location of teats (20) for milking") not as added subject-matter, but as an appropriate clarification.

3.3 Therefore, the Board is satisfied that claims 1 to 15 of the main request, and in particular independent method claim 10, comply with the requirements of Article 123(2) EPC.

4. **Main Request - Novelty and inventive step**

4.1 The Board agrees with the Appellant and the provisional opinion in section 3, re item V, of the WOISA, that the introduction of the features of in particular claim 30 into claim 26 for device claim 1, and of the features of claim 48 into claim 44 for method claim 10, render those claims both novel and inventive over the cited prior art.

4.2 D1 discloses a milking robot (paragraphs [0009], [0057], Figs. 1, 5) with automatic teat detection and connection using a sensor control unit in the form of a



3D camera 100 and a CPU 122 connected to a PC 126. The PC 126 can display warnings if the CPU establishes on the basis of the images from the 3D camera that a disturbance or other undesired event takes place. However, D1 does not identify the type of disturbance or undesired event, nor does it describe a course of action to be taken in such an event. The subject-matter of claim 1 therefore differs from this prior art in that the controller 135 is adapted

- to switch from the automated mode of operation to the human assisted mode of operation in response to failure to perform a task, and
- to control the location computation unit 125 based on the input received from the control device 500 that is human operated.

D2 discloses a method for performing milking tasks on a dairy animal with a milking robot (column 1, line 41; column 3, line 57 to column 4, line 4, Fig. 1) and a sensor 46 guided robot arm 36, column 7, lines 29 to 34. A first computer 81 with display 82 and keyboard 83 generates error messages upon detection of malfunctioning of parts of the milking robot. A user can assume control using a second computer 85 with display 82 and keyboard 83 if e.g. the robot arm fails, column 9, lines 25 to 35, and paragraph bridging columns 9 and 10. Operation can be switched from automatic to manual via switch 74, column 8, lines 32 to 35. The system can also be switched off (via the keyboard 83) to manually connect the teat cups. The claimed method therefore differs from this known approach in the specific step

- [receiving input from the control device 500 ...] responsive to the information transmitted, wherein the input received includes input for correcting the computed location of the teats 20 for milking.

The subject-matter of claims 1 and 10 is thus new in the sense of Article 54(1) and (2) EPC.

- 4.3 Starting from either D1 or D2 as closest prior art the above differences provide a specific or alternative strategy to deal with the robot failing to perform a task which minimizes human intervention and avoids the necessity to complete the interrupted task manually. Human input directly influencing computation of teat location in case of interruption is more efficient, since it represents a minimal intervention that leaves most of the work to the robot and keeps interruptions short. The problem to be solved can thus be considered as performing milking tasks with a milking robot in an efficient manner.

The proposed solution is not suggested by D1 or D2, according to which human input assists the milking robot in performing its tasks by better positioning a camera or remotely manipulating the milking arm.

Therefore, the Board is satisfied that the subject-matter of claims 1 and 10 involves an inventive step in the sense of Article 56 EPC over the cited prior art.

5. **Main request - Other requirements of the EPC**

Claims 1 to 15 meet also the remaining requirements of the EPC, in particular those of Articles 82 to 84 and Rule 43 EPC. The Board is satisfied that the description is adapted to claims 1 to 15 and cites D1, Article 84 and Rule 42 EPC.

6. **Remittal**

Under Article 11 RPBA 2020 the Board shall not remit a case to the department whose decision was appealed for further prosecution, unless there are special reasons for doing so.

In the present case, the contested decision is only based on non-compliance with Article 123(2) EPC but does not explicitly deal with other requirements of the EPC. However, it refers under point 3 to the WOISA, in which (re item V, section 3) the combinations of original device claims 26, 29, **30** and original method claims 44, **48** "were found to be novel and inventive". These are the claim combinations that are the subject of present claims 1 and 10.

Since the Boards agrees with these findings in favour of the Appellant and the Board is satisfied that the application is now in order for grant, the Board sees no special reason to delay the procedure to grant by a remittal. It has therefore decided not to remit the case to the Examination Division but to complete the examination of the application on its own motion.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division with order to grant a patent in the following version:

#### Description:

Pages 1-3, 5-17, 20, 21, 23-27 of the main request,  
filed with letter of 6 January 2020

Pages 4, 18, 19, 22, 28 of the application as published

#### Claims:

No. 1 - 15 of the main request, filed with letter of  
6 January 2020

#### Drawings:

Sheets 10/10 of the application as published.

The Registrar:

The Chairman:



G. Magouliotis

A. de Vries

Decision electronically authenticated