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Datasheet for the decision of 10 July 2015

Case Number: T 1670/11 - 3.2.04

Application Number: 05077378.7

Publication Number: 1621073

IPC: A01J5/007

Language of the proceedings: EN

Title of invention:
A method and a device for automatically milking a dairy animal

Patent Proprietor:
Lely Enterprises AG

Opponent:
DeLaval International AB

Headword:

Relevant legal provisions:
EPC Art. 100(a), 54, 56, 100(b)

Keyword:
Sufficiency of disclosure - auxiliary request (yes)
Novelty and inventive step -
claim 1 of the auxiliary request (yes)

Decisions cited:

Catchword:

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Case Number: T 1670/11 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 10 July 2015

Appellant: (Opponent)	DeLaval International AB P O Box 39 147 21 TUMBA (SE)
Representative:	Zacco GmbH Bayerstrasse 83 80335 München (DE)
Respondent: (Patent Proprietor)	Lely Enterprises AG Bützenweg 20 6300 Zug (CH)
Representative:	Corten, Maurice Jean F.M. Octrooibureau Van der Lely N.V. Cornelis van der Lelylaan 1 3147 PB Maassluis (NL)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 26 May 2011 concerning maintenance of the European Patent No. 1621073 in amended form.**

Composition of the Board:

Chairman	A. de Vries
Members:	E. Frank
	T. Bokor

Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division, dated 8 April 2011 and posted on 26 May 2011, to maintain the European patent No. 1 621 073 in amended form pursuant to Article 101(3)(a) EPC. The appellant (opponent) filed a notice of appeal on 26 July 2011, paying the appeal fee on the same day. The statement of grounds of appeal was submitted on 4 October 2011.

II. The opposition was filed against the patent as a whole and based on Article 100(a) in conjunction with Articles 52(1), 54, and 56, Article 100(b) in conjunction with Article 83, and Article 100(c) in conjunction with Article 123(2) EPC.

The opposition division held that the first auxiliary request submitted during the oral proceedings met the requirements of the EPC. In its decision the division considered the following prior art, amongst others:

D1 = EP-A-0677243
D2 = SU-A-1169571
D2'= English translation of D2
D4 = WO-A-00/18218
D5 = DE-A-3609275

The following further document was cited in appeal:
DE-C-40 07 327

III. A communication pursuant to Article 15(1) RPBA was issued after a summons to attend oral proceedings, which were duly held on 10 July 2015. In the course of the discussion of added subject-matter vis-à-vis the parent application the respondent (proprietor) withdrew

its by then main request which was based on the claim set held allowable by the opposition division.

IV. The appellant requests that the decision under appeal be set aside and the patent be revoked.

The respondent requests that the decision under appeal be set aside and the patent be maintained in amended form according to the auxiliary request filed during the oral proceedings before the Board, which is based on the first auxiliary request filed with its reply dated 20 February 2012.

V. The wording of claim 1 of the auxiliary request reads as follows:

" A method of automatically milking a dairy animal, in particular a cow, said method comprising:

a) the step of activating the teat cup (2) for milking a teat of the dairy animal,
b) the step of measuring a milking parameter during milking the teat during step a) for obtaining a value of the milking parameter, and
c) the step of deactivating the teat cup (2) when a deactivation threshold has been reached,
the deactivation threshold being determined with the aid of the value of the milking parameter characterized in that the method comprises the steps of
- storing in a memory (17) of a computer (13) a number of ranges of average milking parameter values,
- storing in a memory (17) of the computer a respective threshold milking parameter value corresponding with a certain range,
- comparing the average milking parameter value with the ranges stored in the memory, and

- deactivating the teat cup (2) when the momentary value of the milking parameter value equals or is lower than the threshold milking parameter value corresponding with the average milking parameter value."

VI. The appellant argued as follows:

Sufficiency of disclosure

The patent fails to disclose over what time an average is determined (over a few minutes, or a progressive average), how to select the ranges, and how to select thresholds corresponding to these ranges. As for the values indicated in table I of the patent, based on these flow rates, claim 1 cannot be carried out, since milk flow rates are usually known to be in the order of thousands of ml/min, see D4, charts. Thus, the milk flow will be relatively stable, and never drop below 500 ml/min. Since it is also unknown how the milk curve ends, the milking of claim 1 cannot be put into practice. Finally, the patent does not describe what the method of claim 1 is actually for, since its features do not reflect as to how the udder health can be improved, see patent par. 0003. Moreover, the admission criterion for the milking robot in claim 14 (claim 16 as upheld) cannot take place, since the milking must start beforehand. Therefore, claims 1 and 14 are insufficiently disclosed.

Novelty

Claim 1 is not limited to a single parameter, but encompasses also a multidimensional milking parameter, e.g., a combination of both the milk flow and electric conductivity of the milk, cf. also claim 3 of the patent as upheld. Since claim 1 does not necessarily

require the same milking parameter, and moreover the average milking parameter does not have to be the average of the measured milking parameter, D1 deprives claim 1 of novelty.

Inventive step

The peak flow values of D2 must be smoothed and, therefore, average milking parameter values are determined. Moreover, there is a clear relationship between the maximum flow rate and the cut-off point of the milking, and the peak levels stored in D2 can also be easily put in a look-up table. Thus, starting from D2, claim 1 is obvious for the skilled person in the light of common general knowledge. Finally, if D1 is chosen as closest prior art, the killed person would generally know, e.g., from D5, D4, D2, or DE-C-40 07 327, that a form of average value of measured conductivity must always be used for comparison. Thus, claim 1 is also not inventive in the light of D1 and common general knowledge. Therefore claim 1 does not involve an inventive step.

VII. The respondent argued as follows:

Sufficiency of disclosure

As to the nature of an average, this is clear based on claim 1 alone. However, examples are also given in the patent that the average is recorded continuously from the starting time, see par. 0037, 0043, and claim 8. The milk flow rates in table I of the patent show how the drop-off behaviour of a milk flow curve can be put into practice as a look-up table. D4 cannot provide any evidence that the milk drop might not be in the order of hundreds ml/min, however, the concept of the

invention of claim 1 can be readily derived from the illustrative example of table I. The real values have to be adapted to the milk flow curve at hand, e.g., as shown in chart I of D4. Thus, claim 1 can readily be carried out by the skilled person. Regarding claim 14 (claim 16 as upheld) it is obvious that the adaptation can take place beforehand and be used for the next visit of the animal.

Novelty

The method of claim 1 does not foresee switching between parameters. That is, either the milk flow, or the conductivity of the milk of D1 has to be understood as the milking parameter of claim 1 of the patent. Moreover, D1 does not seem to compare an average milking parameter with the ranges.

Inventive step

In D2 no clear distinction is made between momentary and average values. Moreover, D2 teaches to use a proportional value (divide by 20) instead of a look up table. Starting from D1, it is nowhere hinted at the use of average milk flow values according to claim 1, as also found by the opposition division. Therefore claim 1 is inventive in the light of D2 or D1, respectively, and the common general knowledge.

Reasons for the Decision

1. The appeal is admissible.

2. *Sufficiency of disclosure*

2.1 Claim 1 is directed towards a method of automatically milking a dairy animal, e.g. a cow. According to the preamble of claim 1, the method comprises the steps of activating the teat cup for milking a teat, and measuring a milking parameter during milking for obtaining a value of the milking parameter. In a further step, with the aid of the value of the milking parameter, a deactivation threshold is determined, followed by deactivating the teat cup when the deactivation threshold has been reached.

It is common ground that, based on this basic introductory portion of claim 1 alone, the skilled person would understand that, as opposed to the situation with pre-set deactivation thresholds the run-off times for milking will vary, because of different deactivation thresholds which have been determined in conjunction with the value of a milking parameter measured during milking of the respective animal. The parties also agreed that, in order to determine a deactivation threshold based on the measured value of the milking parameter, it is well known to those skilled in the art to use, e.g., mathematical functions or look up tables.

2.2 According to the characterizing portion of claim 1, the method further comprises the refined steps of:

storing in a memory of a computer a number of ranges of average milking parameter values, and a respective threshold milking parameter value corresponding with a certain range. This is best illustrated by table 1 of the patent which for different ranges of milking parameter values has respective threshold parameter values.

In the final step of claim these ranges and corresponding threshold values are effectively used to deactivate the teat cup in that

the (measured) average milking parameter value is compared with the data of the ranges stored in the computer memory, and the deactivation threshold which corresponds to this average (measured) milking parameter within a certain range is compared with the (measured) momentary value, and

if the (measured) momentary value equals or is lower than the deactivation threshold corresponding with the average (measured) milking parameter value, the teat cup is deactivated.

2.3 The appellant firstly argues that the patent fails to disclose how an "average value" of the measured milking parameter should be determined in claim 1. However, in the Board's view, merely based on the wording of claim 1and his normal understanding of the term "average", the skilled person will have no problem in conceiving ways of determining an average. For example, one of the most trivial and commonly known ways to determine an average of measured values in the course of time that would spring to mind is a progressive average. That is, when the milking begins, all data of a measured milking parameter are simply accumulated from the starting time and the average value of the milking parameter is continuously determined over time.

2.4 Secondly, the appellant argues that claim 1 did not sufficiently describe how to select the ranges of average milking parameter values and, thirdly, how to select a respective threshold corresponding to these ranges, for carrying out the claimed invention.

However, taking into account his common general knowledge, in order to put the cut-off procedure of claim 1 into practice in at least one way, in the Board's view the skilled person does not need concrete numbers of the tabled ranges and their respective thresholds. Rather, the skilled person will readily identify the method's cut-off principle from the claim. When putting this principle into practice he will invariably look for and determine technically meaningfully dimensioned values adapted to the particular circumstances and conditions of application : if for example he were to use the characteristics of the milk flow, he will choose ranges and thresholds appropriate to the drop-off behaviour of a measured milk flow curve with which he is only too familiar. It will also be evident to him from general considerations that in order to realize the condition of claim 1's calculation that, if a measured momentary milking parameter value has to be "equal or lower" than the determined threshold parameter stored in the computer to deactivate the teat cup, he should choose his momentary and average milking parameter values such that these change during milking. If they do not and the momentary value does not decline in below the calculated average value the cut-off condition will never be met and the teat cup never deactivated.

2.5 In any case Article 83 EPC does not require that method claim 1 itself disclose one way of enabling the skilled person to carry out the claimed invention. Rather it is the entire disclosure which should sufficiently clear and complete. In this case, the specification of the patent gives examples of both how to determine the average milk flow, and how to determine suitable ranges and corresponding thresholds for deactivating the teat

cup when the milk flow is used as the milking parameter of claim 1.

2.6 For example, in paragraph 0037, the patent describes that the starting time of milk flow as well as milk flow itself is determined and that from these data the computer continuously determines the average milk flow. In paragraph 0043 it is stated that the average value may be calculated as a progressive average, and in claim 8 of the patent it is also required that from the starting time the average value of the milking parameter is recorded continuously. As already discussed under point 2.3 above with regard to the wording of claim 1, in view of these passages in the description read contextually the skilled person understands immediately that he must keep averaging from the point when the milk flow starts, contrary to the appellant's view.

2.7 The appellant has further referred to D4, which would allegedly represent common general knowledge, as showing that peak flow rates are in the order of thousands ml/min (see charts I to VIII), rather than hundreds of ml/min as in the patent, which would therefore be unrealistic and thus unrealizable. As argued by the respondent, the Board is however unconvinced that D4 thus could establish any plausible evidence that the milk flow drop cannot take place at flow rates as in table I of page 5 of the patent. All the more so as further document D2 (see page 4, first paragraph, last sentence), cited by the appellant against inventive step, does appear to show magnitudes of the rate for disconnection of the teat cups in the order of hundreds g/min (i.e. ml/min), i.e. in line with the patent in suit.

As also advanced by the respondent, the Board holds that table I on page 5 of the patent is merely meant to illustrate the general idea of the run-out behaviour of a milk flow curve, and how average milk flow ranges and threshold milk flows may be stored in the computerized memories of claim 1 and effectively used to determine cut-off. Whether or not the drop-off values indicated in table I on page 5 are in the order of hundreds is in the Board's view neither essential nor relevant to understanding the core concepts illustrated by table I. As explained under point 2.4 above, actual real values will need to be determined based on the case at hand by the person skilled in the art, which he will do without undue burden.

2.8 Regarding the appellant's argument that an underlying advantage described in the patent but not in the claim, viz. that a dairy animal can be milked optimally with respect to udder health (cf. patent, paragraph 0003), is not reflected in drop-off milk flow rates, and thus cannot be realised by the method of claim 1, the Board adds that this does not relate to the question of whether or not the features of present claim 1 can be put into practice. Rather, and certainly in the present case, whether the invention as defined by the features of claim 1 actually achieve asserted technical advantages relates to the question inventive step of claim 1 over the prior art.

2.9 To conclude, in the Board's judgment, the patent discloses the invention of method claim 1 in a sufficiently clear and complete manner for it to be carried out by the skilled person at the date of filing.

2.10 Finally, contrary to the appellant's view, claim 14, which corresponds to claim 16 as upheld by the opposition division, which in turn corresponds to claim 25 as granted, can also be put into practice by the skilled person. Paragraph 0026 of the patent provides a simple example of how this works: if the measured value indicates that an animal is ill, the admission criterion is changed so that it is not admitted. Naturally, this refers to the next time it presents itself.

2.11 Therefore the patent according to the auxiliary request meets the requirements of Article 83 EPC.

3. *Novelty*

3.1 Document D1 describes a method for milking animals, which uses mastitis sensors. The signals supplied by these sensors are a measure of the conductivity of the milk, and are compared to the average of the milk conductivity recorded. A signal M, which indicates mastitis, can be produced automatically in the computer, when the last-measured milk conductivity has exceeded the progressive average recorded in the computer to a given extent. See D1, column 10, line 56, to column 11, line 30.

Moreover, in D1 the computer derives a combined threshold value D from both the signal M and thresholds D1 and D2. The thresholds D1 and D2 are not based on the parameter "milk conductivity", but are recorded separately by means of a programme for the parameter "milk flow". As soon as a signal S from a milk flow sensor, i.e. the measured milk flow, has fallen below the threshold D, the vacuum in the relevant teat cup is neutralized and the teat cup may be disconnected, i.e.

the teat cup is deactivated. See D1, column 11, lines 30 to 44.

3.2 However, contrary to the appellant's view, the Board reads claim 1 of the patent as requiring that the same single milking parameter is used throughout its method steps, and that it is this parameter that is finally compared to the ranges of that parameter to determine the corresponding threshold stored in the computer. Whether claim 3 as upheld by the opposition division possibly contradicts this understanding of claim 1, or not, is beside the point: this claim has been omitted in the present auxiliary request to overcome Article 83 objections of the appellant, and also the description has been adapted accordingly.

3.3 Thus interpreted and as argued by the respondent, D1 fails to disclose the above feature of claim 1, namely it does not disclose that the same milking parameter value, viz. milk conductivity or milk flow, is used in D1 to compare to ranges and corresponding thresholds of conductivity respectively flow as required by method claim 1 of the patent. D1 teaches either a single changing conductivity threshold (derived from an average of past measurements) or two different pre-set flow thresholds one for if mastitis, the other if no mastitis is detected (see the Boolean equation in column 11, line 53). There are certainly not different thresholds for different ranges of conductivity or flow, that is average conductivity or flow values are not compared to different ranges of conductivity respectively flow. Thus D1 also does not directly and unambiguously disclose comparing an average milking parameter with ranges stored in D1's computer. Finally, even if some form of smoothing or filtering can be

assumed, D1 compares "last-measured milk conductivity" not an average as is required under claim 1.

3.4 Therefore the Board holds that D1 cannot deprive the subject-matter of claim 1 of novelty. Novelty over the remaining prior art addressed in the proceedings is not in dispute. Thus, the subject-matter of claim 1 of the auxiliary request complies with the requirements of Article 54 EPC.

4. *Inventive step*

4.1 The appellant considers document D2 as closest prior art, which concerns a method of machine milking cows. It is common ground that the milk flow rate is detected in D2, and that milking will be stopped dependent on the maximum flow rate of the animal, which is stored as a peak value in the computer. See D2', page 3, second last paragraph, and page 4.

4.2 However, contrary to the appellant's view, even if D2's peak flow rate values were somehow smoothed by the computer, D2 in any case does not provide an unambiguous disclosure for the skilled person that D2's peak value is to be determined by averaging as required by claim 1 of the patent. Rather, after starting milking is continued and, as soon as the next value of the rate of milk flow drops below the previous value, the computer stores the "maximal rate" to so determine the peak rate during milking . Moreover, D2 invariably teaches to calculate a proportional value (one-twentieth) of the stored "maximal rate" peak value to determine the threshold milk flow, see D2', page 4, first paragraph, which is not the same as storing different thresholds for different ranges of averages as required by claim 1.

4.3 Summing up, as argued by the respondent, D2 neither teaches determining average values of the milking parameter, nor does it use different stored thresholds for different ranges to be compared with a measured average milking parameter. The problem underlying these distinguishing features of claim 1 with respect to D2's disclosure can be considered as the provision of an alternative automatic method for stopping milking.

Based on mere common general knowledge the Board does not believe that starting from the teaching of D2, the skilled person would as a matter of obviousness consider modifying its teaching in the sense of claim 1. This is because the Board considers the two approaches to be fundamentally different. Whereas cut-off in D2 hinges on the one time "peak value" determination of the milk flow, the claimed method uses averages to determine different thresholds.

4.4 The Board is further unconvinced by the remaining lines of argument referred to in the written procedure. The milking method of D1, see point 3 above, is also manifestly different from that of claim 1 of the patent. If the skilled person starting from D1, neither his common general knowledge, nor D5 (which is related to measuring and processing of the milk flow profile to increase the milk flow), D4 (see charts I to VIII), or D2, provide any suggestion to modify D1's teaching that leads to the alternative method of claim 1 of the patent. În this regard, late filed DE-C-40 07 327, which only describes the processing of milk conductivity signals (see abstract), is not considered to be any more relevant than the cited prior art on file .

4.5 It follows from the above that the subject-matter of claim 1 of the auxiliary request involves an inventive step, and therefore complies with the requirements of Article 56 EPC.

5. Claim 1 of the sole request thus meets the requirements of Articles 83 and 52(1) in conjunction with Articles 54 and 56 EPC. No further objections have been raised nor are any apparent to the Board. In particular, the amendments to the claims and consequential amendments to the description have a clear basis in the original disclosure, Article 123(2) EPC. The Board therefore finds, that taking into consideration the amendments made by the respondent-proprietor, the patent and the invention to which it relates meet the requirements of the EPC, and that therefore the patent can be maintained as amended pursuant to Article 101(3)(a) 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:
Pages 2-6 as filed in the oral proceedings before the Board

Claims:
Claims 1-14 as filed in the oral proceedings before the Board

Drawings:
Figures 1 and 2 as in the patent specification.

The Registrar: The Chairman:

G. Magouliotis A. de Vries

Decision electronically authenticated