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**Datasheet for the decision
of 25 April 2018**

Case Number: T 1740/13 - 3.2.04

Application Number: 08075315.5

Publication Number: 1994818

IPC: A01J7/02

Language of the proceedings: EN

Title of invention:

Teat cup cleaning device and method related thereto

Patent Proprietor:

Maasland N.V.

Opponent:

DeLaval International AB

Headword:

Relevant legal provisions:

EPC Art. 54, 56, 100(b), 123(2), 123(3)
EPC R. 80

Keyword:

Sufficiency of disclosure - (yes)

Novelty - (yes)

Inventive step - (yes)

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 1740/13 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 25 April 2018

Appellant: Maasland N.V.
(Patent Proprietor) Weverskade 110
3147 PA Maassluis (NL)

Representative: Octrooibureau Van der Lely N.V.
Cornelis van der Lelylaan 1
3147 PB Maassluis (NL)

Respondent: DeLaval International AB
(Opponent) P O Box 39
147 21 TUMBA (SE)

Representative: Zacco GmbH
Bayerstrasse 83
80335 München (DE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 17 June 2013
revoking European patent No. 1994818 pursuant to
Article 101(2) EPC.**

Composition of the Board:

Chairman E. Frank
Members: C. Kujat
T. Bokor

Summary of Facts and Submissions

I. The appeal lies from the decision of the Opposition Division posted on 17 June 2013 to revoke the European patent No. 1 994 818 pursuant to Article 101(2) EPC. The appellant (proprietor) filed a notice of appeal on 1 August 2013, paying the appeal fee on the same day. The statement of grounds of appeal was submitted on 22 October 2013.

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, and Article 100(b) EPC.

The Opposition Division held that the patent as granted (sole request) did not meet the requirements of Article 56 EPC for lack of inventive step in the light of D1 or D2 and common general knowledge. In its decision the division considered the following prior art, amongst others:

D1 = US 2005/0211173 A1

D2 = WO 03/077645 A1

III. A communication pursuant to Article 15(1) RPBA was issued on 16 March 2018 after a summons to attend oral proceedings, which were duly held on 25 April 2018.

IV. The appellant requested that the decision under appeal be set aside and the patent be maintained in an amended form on the basis of the 1st auxiliary request filed with the statement of grounds of appeal dated 22 October 2013 (now sole request).

The respondent (opponent) requested that the appeal be dismissed.

V. The wording of claim 1 reads as follows:

"Teat cup cleaning device comprising:

- a heating chamber (2), provided with a discharge (3) which is closable by means of a valve (4), and arranged for connection to at least one teat cup,
- a filling device (20) for filling the heating chamber (2) with an amount of cleaning liquid (11), and
- heating means which are arranged to heat the contents of the heating chamber (2),

characterized in that the filling device (20) is arranged to fill the heating chamber (2) with such an amount of cleaning liquid (11) that, in a situation in which the heating chamber (2) has been closed by means of the valve (4) and the cleaning liquid (11) has been heated to a temperature T higher than the boiling point T_k of the cleaning liquid at ambient pressure, the valve (4) being arranged to open in this situation, there will be cleaning liquid (11) in the liquid state present in the heating chamber (2),

wherein the teat cup cleaning device comprises a connecting line (17) between a liquid supply (23) and the discharge (3),

wherein the heating chamber (2) comprises an expansion means which is arranged to enable expansion of the liquid to be heated,

wherein the expansion means (36) comprises a gas retaining means which is arranged to keep a sub-volume of the heating chamber (2) free of cleaning liquid during filling, wherein the sub-volume in the case of unheated cleaning liquid amounts to at least 2%, and to 50% at the most, of the volume of the heating chamber (2)."

VI. The appellant argued as follows:

A particular filling level of D1's heating chamber 11 cannot be deduced merely based on the height of the immersion heater schematically shown in figure 2. Thus, the cleaning liquid level required by claim 1 during filling, viz. at least 50% of the heating chamber, establishes novelty over D1.

Moreover, D1 describes that only steam is conveyed to the teat cups. Even if steam is heated to a (controlled) temperature between 100°C and 150°C in a short period of time, D1 would not lead to a raised water level up to 50% of the heating chamber, unless the advantageous effect of a mixture of superheated water and steam for disinfecting was known. More water does not necessarily result in more steam. This is in any case against the teaching of D1, which teaches to use steam for disinfection at a desired steam temperature. D1 consistently suggests to discharge steam only, and seeks to minimize the amount of water to save energy. Hence, starting from D1, a water level up to one half of the heating chamber would not be obvious for the skilled person if he had to increase disinfection capability, let alone to invariably fill at least 50% of D1's heating chamber with water prior to being heated. D2 is not more relevant than D1, and also gives no clue as to the filling height of the described heating chamber, cf. fig. 6a embodiment of D2. Therefore, claim 1 is inventive in the light of D1 (or D2) and common general knowledge.

VII. The respondent argued as follows:

The coil of the immersion heater shown in figure 2 of D1 extends over more than one half of the heating

chamber 11, and shall remain at least covered with water to operate. Thus, the filling level according to claim 1 is also implicitly disclosed by D1. Therefore D1 deprives claim 1 of novelty.

Furthermore, the closed vessel of D1 is heated above atmospheric pressure, since a steam temperature between 100°C and 150°C at the teat liners (and teat cups) is suggested by D1. Consequently, the heating chamber of D1 must inevitably contain superheated water and steam at the moment of opening of the discharge valve.

Therefore, it would be obvious for the skilled person, to keep at least 50% of water in the heating chamber to have enough superheated steam available. Therefore, starting from D1 (or D2) and seeking to provide sufficient steam, the skilled person would directly arrive at the subject-matter of claim 1. Hence, claim 1 does not involve an inventive step.

The use of the claimed pieces of apparatus would not of itself necessarily lead to an apparatus specifically configured to generate the claimed effect. During the oral proceedings, the Board referred to its communication and *inter alia* indicated its preliminary opinion that the claims fulfilled the requirements of Articles 100(b) and 83 EPC. The respondent declared that no further submissions would be made on this issue.

Reasons for the Decision

1. The appeal is admissible.

2. Amendments

As regards the amendments to granted claim 1, these are based on claims 5 and 6 as originally filed. Moreover, also the consequential amendments to the description have a clear basis in the original disclosure. The respondent did not bring forward any objections, and also the Board is satisfied that the requirements of Rule 80 and Articles 123(2) and (3) EPC are fulfilled.

3. Sufficiency of disclosure

No further arguments have been brought forward by the respondent during the oral proceedings. Nor has the Board any reasons to differ from its preliminary opinion in its communication dated 16 March 2018. The application as originally filed (claims, description, drawings) clearly teaches the skilled person as to how the subject-matter of claim 1 can be put into practice at the date of filing, viz. that not only vapour, but a vapour-liquid mixture can be carried outside through the discharge for cleaning and/or disinfecting. Cf. e.g., paragraphs 0018, 0023, and 0025 of the application (as published). Therefore, the ground of opposition under Article 100(b) EPC does not prejudice the maintenance of the patent as amended.

4. Novelty

4.1 Claim 1 is directed to a teat cup cleaning device, which comprises a heating chamber and a filling device for filling the chamber with an amount of cleaning liquid. The heating chamber of claim 1 has an expansion means. This is a gas retaining means which enables expansion of the liquid to be heated, and which is arranged to keep a sub-volume of the heating chamber

free of cleaning liquid during filling by means of the filling device.

- 4.2 It is common ground that the volume of the heating chamber may constitute both a portion which is may be occupied by liquid and a sub-volume which remains liquid-free, and that in that case the filling device of claim 1 may serve as a gas retaining means, since filling the chamber to a controlled level necessarily keeps the remaining space of the heating chamber liquid-free, cf. also paragraph 0016 of the patent specification.
- 4.3 As to the volume distribution during filling, claim 1 requires that the liquid-free sub-volume amounts to at least 2%, and to 50% at the most, of the volume of the heating chamber in the case of unheated cleaning liquid. In other words, where the heating chamber itself forms both liquid-filled and liquid-free volumes of claim 1, at least 50% of the heating chamber must invariably be filled with cleaning fluid prior to being heated.
- 4.4 Document D1, see figure 2, relates to a disinfection device of a milking parlour. A heating chamber (heating device 11) together with a filling device (valve 14) are described. Moreover, the discharge of the heating chamber is closable by means of a valve (release device 16).

When a particular water level in the heating chamber (heating device 11) is detected by a (non-shown) fluid level measuring member, the filling device (valve 14) is shut off, and a heating element 18 that is located in the heating chamber (heating device 11) heats the water to steam. When disinfecting is started, the

discharge valve (release device 16) is controlled to be opened, so that steam can be conveyed from the heating chamber (heating device 11) to the teat liners 30, which are mounted in the teat cups 4. After a span of time of approximately 3 to 15 seconds, the release of steam is shut off, cf. D1, paragraph 0099, and figure 2.

4.5 It has not been contested that the heating chamber of D1 (heating device 11) may be partially filled with water, and that D1's heating chamber thus may form both liquid-filled and liquid-free volumes according to claim 1 of the patent. The (non-shown) fluid level measuring member of the filling device (valve 14) and the associated control unit 5 (cf. paragraph 100) in that case constitutes a gas retaining means as an expansion means within the meaning of claim 1, cf. points 4.1 and 4.2 above.

4.6 The respondent moreover argues that the volume distribution kept by the expansion means as claimed in claim 1 must also be considered disclosed by D1. The argument goes that the coil of the immersion heater (heating element 18) as shown in figure 2 of D1 apparently extends over more than one half of the heating chamber (heating device 11). Consequently, more than 50% of D1's heating chamber must always be filled with water, since an immersion heater's coil shall remain at least covered with water when the heater is operated. Therefore, more than 50% of the volume of the heating chamber (heating device 11) has to be filled with cleaning liquid prior to being heated and, thus, in case of a partially filled heating chamber, at least 2%, and to 50% at the most, of the volume of the heating chamber is kept free of cleaning liquid as a

sub-volume during filling in the case of unheated cleaning liquid, cf. point 4.3 above.

- 4.7 The Board however concurs with the appellant's view, that in the absence of any information from D1's description, no basis of disclosure can be gleaned from the schematic drawing of D1's figure 2 by the skilled person, in particular it is not disclosed that the coil of the immersion heater shown (without any indication that the drawing of Fig 2 is to scale) would have to extend over a particular length or height of the heating chamber (heating device 11).

Thus, the Board holds that the volume distribution requirement according to claim 1, viz. that at most 50% of the heating chamber is kept free of liquid, i.e. at least 50% of the heating chamber must always be filled with cleaning fluid prior to being heated, cf. point 4.3 above, cannot be considered to be directly and unambiguously disclosed by D1.

- 4.8 Therefore claim 1 is novel over D1, Article 54 EPC. Novelty over the remaining prior art is not in dispute, and also the Board has no reason to take a different view.

5. Inventive step

- 5.1 As for the assessment of inventive step of claim 1, the respondent argues that D1 forms a suitable starting point. The subject-matter of claim 1 in any case differs from D1's disclosure in that:

at most 50% of the heating chamber is kept free of liquid, that is, at least 50% of the heating chamber

must invariably be filled with cleaning fluid prior to being heated, cf. novelty discussion above.

- 5.2 By setting a maximum to the liquid-free sub-volume according to claim 1, i.e. to the "gas bubble", it is prevented that too little liquid enters the heating chamber, cf. patent, paragraphs 0010 and 0012.

As argued by the appellant, a sufficient amount of cleaning liquid in the liquid state at the moment of opening the valve of discharge is particularly important, since the cleaning liquid is a superheated liquid in this situation, and in this manner it is ensured that not only vapour, but a vapour-liquid mixture will be carried outside through the discharge. In view of the much higher density of liquid, the total heat content of such a discharged vapour-liquid mixture is much higher than the heat content of vapour only, cf. patent, paragraph 0018.

- 5.3 Therefore, the Board shares the appellant's view that the problem to be deduced in the light of the technical effect of claim 1's distinguishing volume distribution requirement can be formulated as follows:

How to increase the disinfection capability of the teat cup cleaning device, cf. patent, paragraph 0018, column 4, lines 5 and 6.

- 5.4 The respondent argues that the closed vessel of D1 is heated above atmospheric pressure and still contains liquid, since during operation, the immersion heater must be covered with water. This is in particular hinted at in an embodiment of D1, where water is heated to such temperature that the steam has a temperature between 100°C and 150°C when in contact with the teat

liners 30. That is, water and steam must have been superheated beforehand, cf. D1, paragraphs 0019, 0021, 0061 and 0062. Thus, it would be an obvious modification for the skilled person, to retain at least 50% of water in the heating chamber (heating device 11) in order to produce sufficient superheated steam necessary for disinfection of the teat liners 30.

5.5 However, given that the cleaning liquid of D1 (water) has been heated to a temperature higher than the boiling point of the cleaning liquid at ambient pressure and the discharge valve (release device 16) is arranged to open in this situation, and there would also be some cleaning liquid in the liquid state present in the heating chamber (heating device 11) as argued by the respondent, D1 neither discloses nor hints at a certain minimum filling level of the heating chamber prior to heating.

5.5.1 The Board shares the appellant's view that throughout D1 it is taught that only steam is conveyed to the teat liners 30 (and teat cups 4) for disinfection purposes. More particularly, the temperature range between 100°C and 150°C may indeed be chosen as a practical active temperature range for attaining a complete steam disinfection of at least a part of the teat liners 30, cf. D1, paragraph 0019. This enables saving of at least resources, time and energy, cf. D1, paragraphs 0006, 0007, and 0008.

However, D1 does not give any clue as to the control of the filling level of the heating chamber in order to obtain steam of a temperature between 100°C and 150°C for disinfection. Rather, as argued by the appellant, to improve disinfection, a proper measurement of the temperature by means of a temperature feedback control

unit is suggested throughout D1. This serves to ensure that the steam is heated to the desired steam temperature between 100°C and 150°C in an efficient manner. Moreover, the produced steam is usually applied for a short time (3 to 15 seconds) for achieving the desired disinfection, cf. paragraphs 0019, 0020, 0061, 0062, 0072, 0076, 0080, and 0082.

- 5.5.2 As further argued by the appellant, unless the skilled person knew about the advantageous effect of a mixture of superheated water and steam to be led into the teat liners, it would not be apparent for him that a raised water level up to 50% of the heating chamber (heating device 11) would produce more steam. Since D1 moreover seeks to minimize the amount of water to save energy for disinfection, more water in any case would appear to be less efficient for a mere generation of steam over a short time period, cf. above. Much less would the skilled person be taught by D1 to invariably fill, i.e. always, at least 50% of D1's heating chamber (heating device 11) with water prior to being heated.
- 5.6 The Board thus holds that, starting from the teaching of D1 and faced with the problem of increasing the disinfection capability of D1's teat cup cleaning device, the skilled person would not be prompted, merely based on common general knowledge, to block for cleaning liquid (water) at least half of the volume of D1's heating chamber (heating device 11) during filling, as is invariably required by present claim 1.
- 5.7 Document D2 is not considered to be more relevant than D1. As in D1, only vapour is generated by means of a heating chamber (chamber 73), which effectively cleans, disinfects and/or sterilizes a teat cup, cf. in particular the figure 6c embodiment on page 23 of D2.

D2 again neither discloses nor hints at a certain minimum filling level of the heating chamber.

- 5.8 Summing up, the Board concludes that the skilled person would not, without hindsight, arrive at the subject-matter of claim 1 in the light of document D1 (or D2) and common general knowledge in an obvious manner. Finally, the Board is also convinced that the remaining documents referred to in the written procedure are not more relevant than those discussed before the Board.

Therefore, the subject matter of claim 1 involves an inventive step, Article 56 EPC.

- 5.9 No further objections have been raised nor are any apparent to the Board. The Board therefore finds, that taking into consideration the amendments made by the respondent, 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 to 9 (Columns 1 to 15) of the description filed during the oral proceedings before the Board,

Claims:

1-17 of the 1st auxiliary request filed with the statement of the grounds of appeal dated 22 October 2013,

Drawings:

Figures 1-5 of the patent specification.

The Registrar:

The Chairman:



G. Magouliotis

E. Frank

Decision electronically authenticated