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**Datasheet for the decision  
of 22 July 2014**

**Case Number:** T 0922/12 - 3.2.06

**Application Number:** 04000337.8

**Publication Number:** 1464751

**IPC:** D06F39/08, D06F35/00, D06F39/04

**Language of the proceedings:** EN

**Title of invention:**  
Steam jet drum washing machine

**Patent Proprietor:**  
LG Electronics, Inc.

**Opponents:**  
Daewoo Electronics Corporation  
Miele & Cie. KG  
Schutzrechte/Verträge

**Headword:**

**Relevant legal provisions:**  
EPC Art. 123(2)  
EPC 1973 Art. 56  
RPBA Art. 13(1)

**Keyword:**  
Late-filed request - admitted (yes)  
Inventive step - (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
Boards of Appeal  
Chambres de recours**

European Patent Office  
D-80298 MUNICH  
GERMANY  
Tel. +49 (0) 89 2399-0  
Fax +49 (0) 89 2399-4465

Case Number: T 0922/12 - 3.2.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.06**  
**of 22 July 2014**

**Appellant:**  
(Patent Proprietor)

LG Electronics, Inc.  
20, Yeoeuido-dong,  
Youngdeungpo-ku  
Seoul 150-010 (KR)

**Representative:**

Urner, Peter  
Ter Meer Steinmeister & Partner  
Mauerkircherstrasse 45  
81679 München (DE)

**Respondent:**  
(Opponent 1)

Daewoo Electronics Corporation  
Narakeyum Jeodong Building  
1ga Jeodong  
Junggu  
Seoul  
100-031 (KR)

**Representative:**

Stolmár, Matthias  
Stolmár Scheele & Partner  
Patentanwälte  
Blumenstrasse 17  
80331 München (DE)

**Respondent:**  
(Opponent 2)

Miele & Cie. KG  
Schutzrechte/Verträge  
Carl-Miele-Strasse 29  
33332 Gütersloh (DE)

**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted on 16 February  
2012 revoking European patent No. 1464751  
pursuant to Article 101(3) (b) EPC.**

**Composition of the Board:**

<b>Chairman</b>	M. Harrison
<b>Members:</b>	M. Hannam
	W. Sekretaruk

## Summary of Facts and Submissions

- I. An appeal was filed by the proprietor (appellant) against the decision of the opposition division revoking European Patent No. 1 464 751. With its grounds of appeal, the appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims as granted, or auxiliarily that it be maintained according to one of auxiliary requests 1-6.
- II. The respondent (opponent II) requested that the appeal be dismissed, arguing that claim 1 met with objections under Articles 100(c) and 100(a) EPC, that claim 1 according to each of auxiliary requests 1-4 and 6 at least failed to meet the requirement of Article 123(2) EPC, and that claim 1 of auxiliary request 5 lacked an inventive step (Article 56 EPC).
- III. With letter of 6 March 2013, opponent I withdrew its appeal.
- IV. The following documents relevant for the present decision were cited:
- D4 JP-A-04158896 (and an English language abstract)  
D7 EP-A-1 275 767  
D8 DE-A-196 41 309  
D9 JP-A-2002-360987  
D9' Certified translation into English of D9  
D10 US-A-4 207 683
- V. The Board issued a summons to oral proceedings including a communication containing its provisional opinion, in which it indicated *inter alia* that the ground of opposition under Article 100(c) EPC appeared

prejudicial to maintenance of the patent with regard to the subject-matter of claim 1 of the main request, the subject-matter of claim 1 of each of the auxiliary requests 1-6 appeared not to meet the requirement of Article 123(2) EPC and that D9 seemingly did not disclose a steam generator for heating water to obtain high temperature and high-pressure steam.

VI. Oral proceedings were held before the Board on 22 July 2014, during which the appellant filed a new main request replacing all requests previously on file. It requested that the decision under appeal be set aside and the European patent be maintained with the following documents:

Claims 1-19, filed 22 July 2014;  
Description page 2, as granted;  
Description pages 3, 3a, filed 22 July 2014;  
Description pages 4-6, as granted;  
Figs. 1-6, as granted.

The respondent requested that the appeal be dismissed.

VII. Claim 1 of the main request reads as follows:

"A steam jet drum washing machine comprising:  
a tub (56) disposed in a casing (52) and adapted so that water can be supplied into the tub (56);  
a drum (58) rotatably mounted in the tub (56) and adapted so that clothes can be put into the drum (58) and water can be supplied into the drum (58);  
a water-supply unit (62) for supplying water into the tub (56) and the drum (58); and  
a steam generator (70) connected to the water-supply unit (62) for heating water to obtain high temperature and high-pressure steam;

the water-supply unit (62) comprises:  
a water-supply tube (62c) connected at one end thereof to the steam generator (70) for supplying the water into the steam generator (70); and  
a steam tube (62d) having one end connected to the steam generator (70) and the other end (62d') disposed in the tub (56) and the drum (58);

wherein

the water-supply unit is disposed in the casing (52) at one side of the tub (56), and  
the other end (62d') of the steam tube (62d) which is formed in the shape of a nozzle penetrates through the upper end of a gasket (57) for preventing leakage of water between the tub (56) and the casing (52), so that the steam guided along the steam tube (62d) is downwardly sprayed through the end (62d') of the steam tube (62d) into the tub (56) and the drum (58)."

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

The subject-matter of claim 1 met the requirement of Article 123(2) EPC with all functionally and structurally related features of the washing machine from paragraph [0027] being included in claim 1. The omission of 'high speed' relative to the steam spraying was not problematic as spraying was always at a high speed in relation to steam. There was no need to include the feature that the gasket was made of rubber as it was unambiguous from the disclosure that only the function of the gasket was important, not its material.

The subject-matter of claim 1 involved an inventive step (Article 56 EPC) over the combinations of D9 with D10 and D10 with D8. D4 and D7 added nothing to the unambiguous disclosure in D9.

D9 disclosed a washer dryer in which the steam was used for removing wrinkles from the laundry during a drying process. The air circulation was to be considered as a dynamic process, such that the flow of air through the reduced duct dimension in the vicinity of the steam feed holes would effect a drawing of the steam from the evaporation chamber into the air duct, possibly by way of the venturi principle. D9 also failed to disclose a steam tube, since the tube carried both air and steam. The combination with D10 was incompatible with D9 due to its disclosing a washing machine with no indication of how this might improve the washing result in D9.

When starting from D10, this disclosed a washing machine lacking any suggestion of a steam spray. When trying to improve the wash results, the dryer known from D8 would provide no hint to provide a steam generator in the washing machine of D10 as it was used in an entirely different context. Also, the steam supply referred to in col.2, lines 34-37 of D8 was generated downstream of valve 20 such that it was generated at atmospheric pressure and thus only at a maximum of 100°C, not at a high temperature. Furthermore, nozzle 6 of D8 was a 'shower head' type spray device, which was inappropriate for combination with the spray arrangement present in D10. The subject-matter of claim 1 thus involved an inventive step over this document combination.

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

The subject-matter of claim 1 failed to meet the requirement of Article 123(2) EPC since it represented an unallowable intermediate generalisation of the original disclosure. Paragraph [0027] disclosed that



the steam was sprayed 'at a high speed' from the end 62d' and that the gasket was 'made of rubber', both of which had not been taken up into claim 1. The presence of a nozzle did not automatically result in a high speed spray. The gasket had specifically been disclosed as being of rubber, rather than an undefined elastomeric composition.

The subject-matter of claim 1 lacked an inventive step (Article 56 EPC) when starting from D9 and considering the teaching of D10. The fan in the air circulation duct shown in Fig. 3 of D9 created a slight overpressure in the region of the steam exit holes; this was accentuated by the flow of circulation air onto the holes. As a result the steam could only exit the evaporation chamber if its pressure exceeded that in the air circulation duct. A high pressure steam (> 1 bar pressure) was thus implicitly generated in the evaporation chamber with a consequent high temperature of the steam (for example >100°C, although a temperature > 100°C was not required). D9 failed to disclose the steam entering the tub and drum through a gasket, yet this was disclosed in D10 (see the Figure). Faced with the problem of improving the wash results, the skilled person would modify D9 with the suggested spraying arrangement of D10, thus reaching the subject-matter of claim 1. It was also to be noted that such similar design considerations governed both washing machines and dryers such that the skilled person would be well versed in each type of machine.

The expression 'high temperature' was also not limited to a temperature above 100°C; instead it was open to the interpretation of the skilled person. D4, for example, referred to water at 80°C providing steam of high temperature. Similarly, D7 disclosed the

production of steam at between 40 and 70°C (see [0015]).

Alternatively, starting from D10 and combining this with the teaching of D8, the subject-matter of claim 1 also lacked an inventive step. D10 disclosed a washing machine lacking simply the spraying of steam into the tub and drum. D8 (see col.2, lines 34-37) included the option of supplying steam to the laundry which would be supplied at greater than atmospheric pressure as evidenced by the presence of valve 20. D8 thus provided the necessary hint to modify the machine of D10 with a steam spray, thereby solving the problem of improving the wash results.

### **Reasons for the Decision**

1. *Admittance of the request into the proceedings - Article 13(1) RPBA*
- 1.1 Despite having been filed during oral proceedings i.e. at a very late stage in the appeal proceedings, this request replaced all requests previously on file, was a response to the objections raised under Article 123(2) EPC in the annex to the summons and further restricted the scope of claim 1 relative to claim 1 of the requests previously on file. Also, the respondent notably did not object to the request being admitted, as it anyway considered the request not allowable due to the subject-matter of claim 1 of the request *prima facie* not meeting the requirement of Article 123(2) EPC.
- 1.2 Article 123(2) EPC

The subject-matter of claim 1 meets the requirement of

Article 123(2) EPC.

- 1.2.1 Claim 1 is based on claims 1 and 2 as originally filed with the addition of features relating to the steam tube taken from paragraph [0027] of the A-publication of the patent application (corresponding to the application as originally filed).

The feature regarding the gasket 'which is made of rubber' in paragraph [0027] is not functionally or structurally linked to the gasket in such a way that its omission from claim 1 results in subject-matter which is not directly and unambiguously disclosed. This feature is positioned in the sentence from where it comes with commas, such that, grammatically in context which is namely its functional context, it would be understood unambiguously only as a preferable feature of the gasket having the specified function.

It is also not necessary for the feature that the steam is sprayed 'at a high speed' to be taken up into the subject-matter of claim 1 as the skilled person understands that high pressure steam, as included in claim 1, will implicitly emit from a nozzle at a 'high speed' when spraying. Its explicit recitation would thus be superfluous.

- 1.2.2 The respondent's argument that specifically a rubber gasket, rather than an undefined elastomeric gasket, was the only unambiguous disclosure which could be derived from paragraph [0027] is not persuasive. Not only does the grammatical reading of paragraph [0027] indicate that the rubber composition is optional (see point 1.2.1 above), but the functional relationship is also lacking between the specific rubber composition and the gasket. The function of the gasket, as

appreciated by the skilled person and stated in col.6, lines 11-12 of the A-publication, is to prevent leakage of water between the tub and the casing. This can be achieved through any compliant gasket material, rubber simply being one preferred option, albeit one which may often be used in the technical field. In appreciating this function of the gasket, the skilled person would regard the gasket in this context and in isolation of the specific rubber composition as being directly and unambiguously disclosed in the application as originally filed.

- 1.2.3 The respondent's argument that the presence of a nozzle would not automatically result in a high speed spray, ignores the influence of the high pressure of the steam emitting from the nozzle and the requirement for it to be sprayed into the tub and the drum. The combination of a nozzle and a source of high pressure steam emitting therethrough in the form of a spray thus implies the presence of a 'high speed' spray. The nature of the sprayed steam being 'high speed' is thus implicitly present in the feature taken up into claim 1. The lack of its explicit definition in claim 1 therefore does not contravene Article 123(2) EPC.

1.3 *Clarity - Article 84 EPC 1973*

- 1.3.1 No objections were raised by the respondent to the clarity of the claims of the request. The Board also sees no deficiencies in this respect. In particular, it may be remarked that since the location of the other end (of the steam tube), which according to claim 1 is disposed 'in the tub and the drum', it is evident that this must be understood by a skilled person in this context to be a location in the vicinity of the opening of the tub and the drum. In this regard it should also

be noted that claim 1 as granted already defines that the other end of the steam tube is 'disposed in the tub', which again can only be understood in context to refer to the location in the vicinity of the opening of the tub, rather than a location 'inside' the tub, in order that it may spray 'into the tub and the drum'. This is also clearly to be understood from its location depicted in e.g. Fig. 4, albeit that an embodiment shown in the Figures is not necessarily determinate of the meaning of a claim.

1.4 The Board thus exercised its discretion under Article 13(1) RPBA to admit the claim into the proceedings.

2. *Novelty - Article 54 EPC 1973*

2.1 The respondent raised no objections to the novelty of the subject-matter of claim 1. The Board also finds no reason to raise an objection in this regard.

3. *Inventive step - Article 56 EPC 1973*

3.1 The subject-matter of claim 1 involves an inventive step over the inventive step attacks presented by the respondent with respect to the claims which were filed during oral proceedings, based on the cited prior art as indicated below.

3.2 D9 in combination with D10

3.2.1 D9 discloses the following features of claim 1 (the references in parentheses referring to D9):  
A steam jet drum washing machine comprising:  
a tub (3) disposed in a casing (1) and adapted so that water can be supplied into the tub (3);  
a drum (4) rotatably mounted in the tub (3) and adapted

so that clothes can be put into the drum (4) and water can be supplied into the drum (4);  
a water-supply unit (25) for supplying water into the tub (3) and the drum (4); and  
a steam generator (35) connected to the water-supply unit (25) for heating water;  
the water-supply unit (25) comprises:  
a water-supply tube (62c) connected at one end thereof to the steam generator (35) for supplying the water into the steam generator (35); and  
a steam tube (see Fig. 3, the air circulation duct from the steam outlet holes of the evaporation chamber 35 to its entry into the tub and drum; contrary to the appellant's argument, this duct carrying both air and steam can be referred to as a 'steam tube', because the term 'steam tube' is a structural feature merely requiring that the tube be suitable for the transport of steam and does not exclude that air and steam are both conveyed) having one end connected to the steam generator (35) and the other end disposed in the tub and the drum (see Fig. 3);  
wherein  
the water-supply unit is disposed in the casing (1) at one side of the tub (3), and  
the other end of the steam tube is formed in the shape of a nozzle (see Fig. 3).

- 3.2.2 The respondent's argument that D9 implicitly disclosed the spraying of high temperature and high pressure steam is not accepted. Whilst there is some merit in the respondent's suggestion that both the effect of the air circulating fan and the impact of the circulating air on the holes exiting the evaporation chamber 35 would increase the required pressure of steam exiting through the holes from the evaporation chamber, this was simply one interpretation of how the machine of D9

might behave. The appellant's argument regarding the reduction in cross-section of the air circulation duct at the entry point of the steam from the evaporation chamber having a venturi effect, thus reducing the pressure in the duct and drawing the steam out of the evaporation chamber, is equally plausible from a technical point of view as to how the machine in D9 operates. With these two opposing arguments each being technically plausible, and neither having greater merit than the other, the Board concludes that it cannot be unambiguously extracted that the pressure in the air circulation duct of D9 would be greater than atmospheric. The pressure of the steam therefore equally does not have to exceed atmospheric pressure, such that the feature regarding high pressure and high temperature steam is not unambiguously disclosed in D9.

- 3.2.3 Regarding the argument that steam emanating from water at 80°C would be regarded as high temperature steam due to the disclosure in D4, this is not persuasive. The respondent's argument is based on the disclosure in a single patent abstract and is thus not representative of the skilled person's understanding of what temperature a 'high temperature steam' entails in the present context. Also, merely because D4 refers to high temperature steam as having a temperature of 80°C does not imply that the patent itself, which does not rely on D4, must be interpreted in such a manner. The skilled person would normally understand that steam will only be produced at atmospheric pressure when water reaches a temperature of substantially 100°C. It is thus not even evident how water at 80°C can emit high temperature steam, as suggested in the abstract of D4; at best water vapour might be present from the body of hot water, not steam at 100°C or greater. A 'high temperature steam', as defined in claim 1, is

to be understood as steam at a temperature exceeding 100°C. The citation of D7 also does not alter the Board's view on this matter because, similarly to the case in D4, steam is stated to be emitted from the water at less than 100°C (in fact at only 40 to 70°C) and thus high temperature steam, at 100°C or greater, is also not disclosed therein.

3.2.4 D9 thus fails to disclose the following features of claim 1:

The nozzle penetrates through the upper end of a gasket for preventing leakage of water between the tub and the casing, so that the steam guided along the steam tube is downwardly sprayed through the end of the steam tube into the tub and the drum, the steam being high temperature and high-pressure steam.

Based on these features of claim 1, the objective technical problem to be solved may be seen as how to improve the washing results of the known washing machine.

3.2.5 D10 discloses a washing machine in which a nozzle (for the spraying of wash water) enters the tub and the drum via the gasket between the casing and the tub (see the Figure). D10 however fails to disclose any steam generating means, let alone one generating high pressure and high temperature steam. A combination of D9 and D10 is thus unable to lead without inventive skill to a washing machine comprising a generator of high pressure and high temperature steam. It should be noted also that the respondent's argument in this regard relies on the feature of a high temperature and high pressure steam already being disclosed in D9, which, as stated above, the Board does not accept.



3.2.6 The subject-matter of claim 1 is thus considered to involve an inventive step when taking into account the respondent's attack starting from D9 and combining with the teaching of D10 (Article 56 EPC 1973).

3.3 D10 in combination with D8

3.3.1 D10 discloses the following features of claim 1 (the references in parentheses referring to D10):

A drum washing machine comprising:

a tub (1) disposed in a casing (see Figure) and adapted so that water can be supplied into the tub (1);

a drum (2) rotatably mounted in the tub (1) and adapted so that clothes can be put into the drum (2) and water can be supplied into the drum (2);

a water-supply unit (9,10,11) for supplying water into the tub (1) and the drum (2);

the water-supply unit is disposed in the casing (see Figure) at one side of the tub (1), and

the water-supply unit (9,10,11) comprises:

a water supply tube (12) having one end connected to the water-supply unit (9,10,11) and the other end (12) disposed in the tub (1) and the drum;

the other end (12) of the water-supply tube which is formed in the shape of a nozzle penetrates through the upper end of a gasket (see Figure) for preventing leakage of water between the tub (1) and the casing, so that the water guided along the water-supply tube (12) is downwardly sprayed through the end of the tube into the tub (1) and the drum (2).

The subject-matter of claim 1 thus differs from the washing machine known from D10 through the presence of: a steam generator connected to the water-supply unit for heating water to obtain high temperature and high-pressure steam; and

a water-supply tube connected at one end thereof to the steam generator for supplying the water into the steam generator.

The objective technical problem may be seen as how to improve the washing results of the known washing machine.

3.3.2 D8 discloses a dryer which can optionally spray the laundry with steam in order to solve a different technical problem, namely to eliminate wrinkles. Already for this reason, the Board holds that a skilled person starting from D10 and considering the teaching of D8 is not led towards the solution of claim 1 without an inventive step, since there is no incitement to do so when considering D8. Also, the steam is generated in a pipe comprising a heating element positioned between valve 20 and nozzle 16 (see col.2, lines 31-37). It is not disclosed that the steam generated in the pipe is volumetrically confined in any way in order for steam at a higher pressure than atmospheric pressure or at a greater temperature than 100°C to be generated. Even through a combination of D10 with D8, therefore, a generation of high pressure and high temperature steam is not necessarily achieved. The subject-matter of claim 1 thus involves an inventive step over this combination of documents.

3.3.3 The respondent's argument that the steam produced in D8 would be at a pressure greater than atmospheric due to the presence of valve 20 is not accepted. Col.2, lines 31-37 describes how the steam generator would be arranged between nozzle 16 and valve 20, such that no pressure above atmospheric could be established within the steam generator which is open to the dryer via the nozzle 16. The valve 20 simply has the function of

controlling the flow of water into the section of pipe comprising the internal heating element. The valve's location is in no way suited to raise the pressure of the steam generated by the internal heating element above the pressure within the dryer i.e. atmospheric pressure.

- 3.3.4 The subject-matter of claim 1 thus involves an inventive step when starting from D10 and combining this with the technical teaching of D8 and wishing to solve the objective technical problem.
- 3.4 With no further relevant arguments or document combinations having been put forward by the respondent, by means of which the skilled person would arrive at the invention, the Board finds that the subject-matter of claim 1 involves an inventive step (Article 56 EPC 1973) over the cited art.
4. No objections were raised by the respondent to the description pages which were adapted in order to support the claims (Article 84 EPC 1973) and to cite the prior art considered relevant. The Board also finds no reason to raise an objection in this respect.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the European patent with the following documents:  
Claims 1-19, filed 22 July 2014;  
Description page 2, as granted;  
Description pages 3, 3a, filed 22 July 2014;  
Description pages 4-6, as granted;  
Figs. 1-6, as granted.

The Registrar:

The Chairman:



M. H. A. Patin

M. Harrison

Decision electronically authenticated