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**Datasheet for the decision
of 17 January 2019**

Case Number: T 0309/15 - 3.2.06

Application Number: 06822474.0

Publication Number: 1956131

IPC: D06C3/06, B29C53/24, B29C53/28,
B29C55/18, D04H1/72

Language of the proceedings: EN

Title of invention:
SHEET PROCESSING APPARATUS AND PROCESS OF PRODUCING SHEET

Patent Proprietor:
Kao Corporation

Opponent:
THE PROCTER & GAMBLE COMPANY

Headword:

Relevant legal provisions:
EPC Art. 100(a), 100(c), 123(2)
EPC 1973 Art. 56
RPBA Art. 13(1)

Keyword:

Inventive step - main request, auxiliary request 2 (no)
Amendments - added subject-matter - main request (no),
auxiliary request 1 (yes)
Late-filed auxiliary requests - request clearly allowable (no)

Decisions cited:

Catchword:



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Case Number: T 0309/15 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 17 January 2019

Appellant: THE PROCTER & GAMBLE COMPANY
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 17 December
2014 rejecting the opposition filed against
European patent No. 1956131 pursuant to Article
101(2) EPC.**

Composition of the Board:

Chairman M. Harrison
Members: M. Hannam
E. Kossonakou

Summary of Facts and Submissions

- I. An appeal was filed by the appellant (opponent) against the decision of the opposition division rejecting the opposition to European patent No. 1 956 131. It requested that the decision be set aside and the patent be revoked in its entirety.
- II. In its letter of reply, the respondent (patent proprietor) requested that the appeal be dismissed, in the alternative that the patent be maintained according to auxiliary request 1.
- III. The following documents, referred to by the appellant in its grounds of appeal, are relevant to the present decision:
- D1 WO-A-2004/038085
D5 JP-A-2003-153946 (and its English translation)
- IV. The Board issued a summons to oral proceedings and a subsequent communication containing its provisional opinion, in which it indicated *inter alia* that the subject-matter of claim 1 of the main request appeared not to meet with objection under Article 100(c) EPC but seemingly did not involve an inventive step. As regards auxiliary request 1, the Board indicated it had serious doubts that the subject-matter of claim 1 met the requirement of Article 123(2) EPC.
- V. With letter of 17 December 2018 the respondent filed further auxiliary requests 2 and 3.
- VI. Oral proceedings were held before the Board on 17 January 2019. The parties' requests were as follows:

The appellant requested that the decision under appeal be set aside and the European patent No. 1 956 131 be revoked.

The respondent requested that the appeal be dismissed (main request, corresponding to a request for the maintenance of the patent as granted), subsidiarily that the patent be maintained on the basis of one of auxiliary requests 1 - 3.

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

"A sheet processing apparatus comprising a pair of rolls having teeth on the peripheral surface thereof in engagement with each other, the rolls being adapted to have a base sheet introduced into the nip thereof while rotating to process the base sheet, the teeth of each roll being in parallel to the axis of the roll, and the teeth on each roll having a pitch of 1.0 to 5.0 mm, a tooth thickness at the foot of less than a half the pitch, and a tooth height equal to or more than the pitch."

Claim 1 of auxiliary request 1 reads as per claim 1 of the main request with the following feature appended:

"and, for each of the rolls, the surface between any two adjacent teeth being flat."

Claim 1 of auxiliary request 2 reads as per claim 1 of the main request with the following feature appended:

"wherein the sheet processing apparatus is configured to stretch the base sheet, wherein the stretching is to a stretch ratio of 50% to 400%."

Claim 1 of auxiliary request 3 reads as follows:

"A process of producing a pull-on garment using a sheet produced by the process of producing a sheet comprising the steps of introducing a base sheet into the nip of a pair of the rotating rolls of a sheet processing apparatus to stretch the base sheet, the sheet processing apparatus comprising a pair of rolls having teeth on the peripheral surface thereof in engagement with each other, the rolls being adapted to have the base sheet introduced into the nip thereof while rotating to process the base sheet, the teeth of each roll being in parallel to the axis of the roll, and the teeth on each roll having a pitch of 1.0 to 5.0 mm, a tooth thickness at the foot of less than a half the pitch, and a tooth height equal to or more than the pitch,
the process of producing a pull-on garment comprising the steps of:
folding a continuous form exterior material comprising the sheet having been stretched in half lengthwise,
joining the folded continuous form exterior material at prescribed intervals in the longitudinal direction to form joints, and
cutting the continuous form exterior material along the joints into individuals."

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

Main request

The subject-matter of claim 1 extended beyond the content of the application as filed. Fig. 2 was a schematic drawing and did not allow the feature of 'the tooth thickness at the foot of less than a half the pitch' to be directly and unambiguously derived

therefrom. The respondent's reliance on para. [0012] as filed also allowed no such conclusion to be drawn.

The subject-matter of claim 1 did not involve an inventive step. D1 disclosed the tooth height of claim 1 since tooth height was the sum of the engagement depth and the clearance at the tip (see page 22, lines 2 to 3). Despite the tooth thickness at the foot and the tooth height being claimed in terms of the pitch, this did not imply that these parameters were generally dependent on each other. It was clear that the thickness at the foot had no technical effect relative to the stretch ratio imparted by the rolls. The alleged high stretch ratio range was also known from D1 (see page 19, line 31 to page 20, line 4). With both the tooth thickness at the foot and the tooth height lacking a technical effect, an inventive step could not be recognised.

Auxiliary request 1

The wording added in claim 1 cannot explicitly be found anywhere in the description as filed. If derived solely from Figs. 2 and 3, both of which are indicated to merely be of a schematic nature, then no information can be derived directly and unambiguously therefrom concerning the surface defined, contrary to Article 123(2) EPC.

Auxiliary request 2

D1 disclosed a stretch ratio of 150% which fell squarely in the claimed range of 50% to 400%. The subject-matter of claim 1 thus lacked an inventive step for the same reasons as for the main request.

Auxiliary request 3

This request should not be admitted as it was late

filed and because no arguments had been provided as to why the subject-matter of claim 1 overcame the inventive step objections of the previous requests. Page 7, lines 3 to 6 of D1 also disclosed the base sheet of D1 for use in a training pant such that the request was *prima facie* not clearly allowable as the method steps for forming an absorbent garment in claim 1 were conventional.

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

Main request

The subject-matter of claim 1 did not meet with objection under Article 100(c) EPC. From the entire disclosure, in particular Fig. 2, of the application as filed, the skilled person could directly and unambiguously derive the claimed subject-matter. The subject-matter of claim 1 also involved an inventive step. This was differentiated from D1 by way of both the tooth thickness at its foot and the tooth height. The tooth thickness at its foot was defined in claim 1 in terms of the pitch of the teeth on the roll, as was the height of the tooth; it was thus evident that tooth thickness, height and pitch were all interrelated in order to define the depth of engagement which governed the degree of stretching imparted to the sheet. Only through a combination of these tooth characteristics could the advantageously high sheet stretching be achieved in a single pass. The objective technical problem solved by the present invention should thus be 'how to achieve a higher stretch ratio'. D1 did not achieve the high stretch ratios of the patent without multiple passes of the web through the incremental stretching system (see page 23, lines 11 to 14).

Auxiliary request 1

The subject-matter of claim 1 met the requirement of Article 123(2) EPC. Both Figs. 2 and 3 disclosed the feature now included in claim 1. Fig. 1 also showed the discontinuity between any tooth wall and the flat surface between the teeth which allowed the adopted feature to be directly and unambiguously derivable from the application as filed.

Auxiliary request 2

The subject-matter of claim 1 involved an inventive step. The claimed stretch ratio of 50% to 400% was not known from D1, since it was not clearly disclosed how the stretch was obtained. The 'incremental stretching systems' (see D1, page 23, lines 11 to 14) indicated that the stretch was a multiple stage process. In the patent the wording of claim 1, in particular the expression 'the apparatus is configured to stretch ...' suggested the claimed stretch ratio being achieved in a single stage. This was furthermore exemplified in para. [0057], where the base sheet was described to be 'passed once', and in para. [0066], where it is stated to undergo 'a single pass', through the rolls in order to produce the stretchable sheet.

Auxiliary request 3

This request should be admitted as it was an attempt to respond to objections raised in the preliminary opinion of the Board. D1 failed to show a sheet according to claims 1 and 6 used in a pull-on garment such that the subject-matter of claim 1 *prima facie* involved an inventive step.

Reasons for the Decision

1. *Main request*

1.1 *Article 100(c) EPC*

The ground for opposition under Article 100(c) EPC is not prejudicial to maintenance of the patent as granted. The reasons for this are however not given here since the subject-matter of claim 1 anyway lacks an inventive step as explained below.

1.2 *Article 100(a) EPC / inventive step*

The ground for opposition under Article 100(a) EPC however is prejudicial to maintenance of the patent as granted since the subject-matter of claim 1 does not involve an inventive step.

1.2.1 When starting from D1, this discloses the following features of claim 1 (references in brackets referring to D1):

A sheet processing apparatus comprising a pair of rolls having teeth on the peripheral surface thereof in engagement with each other (see page 22, lines 22 to 28),
the rolls being adapted to have a base sheet introduced into the nip thereof while rotating to process the base sheet (see page 2, lines 19 to 24),
the teeth of each roll being in parallel to the axis of the roll (see page 22, line 27; Fig. 3), and
the teeth on each roll having a pitch of 1.0 to 5.0 mm (page 21, lines 31 to 33; 0.1" pitch = 2.54mm).

- 1.2.2 As regards the appellant's contention that D1 also disclosed the claimed tooth height, this is not accepted. It is accepted that tooth height can be calculated as the sum of the engagement depth and the tooth tip clearance (see for example Fig. 2 of the patent). However, D1, page 22, lines 2 to 3 disclose a clearance on the sides of the tooth for material thickness, there being no indication in D1 that this would be a necessary or implicit clearance also at the tip of the tooth. While the tip clearance could indeed be the same as the clearance on the sides of the tooth, D1 lacks an unambiguous disclosure of this, such that this feature is also not known from D1.
- 1.2.3 D1 thus fails to disclose the following features of claim 1:
- 1) a tooth thickness at the foot of less than a half the pitch; and
 - 2) a tooth height equal to or more than the pitch.
- 1.2.4 Since these differentiating features do not address a common technical effect, the formulation of partial objective technical problems is appropriate. As regards the partial objective technical problem to be solved by the first of these differentiating features, this may be seen as being 'to provide a suitable width of tooth at the foot'. This very general problem may be seen as objective since, contrary to the arguments of the respondent, no more specific technical effect can be attributed to the claimed thickness at the foot of the tooth.
- 1.2.5 The respondent maintained that, due to the tooth thickness at its foot being defined in terms of the pitch of the teeth on the roll, it was evident that tooth thickness, height and pitch were all interrelated

features contributing to the degree of stretching imparted to the sheet. Whilst it is correct that the tooth thickness at its foot is indeed physically defined in terms of the pitch of the teeth on the roll in claim 1, this, however, does not imply a common functional relationship between these two features, e.g. with respect to the achievable stretch ratio as argued by the respondent.

1.2.6 The sought after high stretch ratio can be achieved primarily through increasing the depth of engagement between the teeth, as also indicated in para. [0015] of the patent. Despite the height of the teeth directly influencing the possible depth of engagement, a limit to this is presented by the need for opposing gear teeth to intermesh when rotated, this limitation being eased by narrowing the width of the teeth in the region of the tooth engagement. Conversely, other than providing the 'anchor' for the tooth to the roll, the thickness of the tooth at the foot has no functional interrelationship with the depth of tooth engagement or, therefore, the achievable stretch ratio. The same was indicated by the appellant when comparing teeth of the same dimensions save for the radius of the fillet at the intersection of the teeth with the roll surface. The tooth with a fillet of large radius would have an appreciably larger tooth thickness at the foot than the tooth with a fillet of small radius, yet the tooth height and resultant depth of engagement would be identical. The tooth thickness at the foot is thus clearly functionally unrelated to the tooth height, depth of engagement and therefore also the stretch ratio imparted by the roll.

1.2.7 Starting from D1 and wishing to solve the above partial objective technical problem, the skilled person would

reach the claimed solution without becoming inventively active since the provision of a tooth thickness at the foot of less than 'a half the pitch' is, as shown above, completely arbitrary, because there is no recognisable technical advantage as regards not only the claimed apparatus but also the sheet processing achievable with the claimed apparatus.

- 1.2.8 Regarding the second differentiating feature identified above, the objective technical problem associated with this may be seen as being 'to provide a suitable tooth height'.
- 1.2.9 The respondent's argument that this objective technical problem should be 'how to achieve a higher stretch ratio' is not accepted. Para. [0020] of the patent discloses a preferred stretch ratio for the claimed processing apparatus being from 50% to 400%. Compared to this, D1 discloses a process whereby a web undergoes a stretch ratio of 150%, i.e. falling squarely in the preferred range of the opposed patent. The technical problem posed by the respondent when starting from D1 is thus not solved by claim 1 and so cannot be regarded as the objective problem.
- 1.2.10 Regarding the respondent's argument that D1 did not provide a comparable stretch ratio to the patent because it was achieved only with multiple passes of the web through the incremental stretching system, this is also not accepted. There is no difference between the stretching carried out according to claim 1 and that disclosed in D1 since, even if it were accepted that D1 discloses solely multiple passes through the incremental stretching system, the invention as claimed also encompasses this possibility to achieve the claimed stretch ratio. The wording of claim 1 does not

exclude multiple passes being required in order to achieve the desired stretch ratio and indeed such multiple passes are also explicitly discussed in para. [0054] of the patent in order to impart 'increased stretchability'. The direct comparison of stretch ratios achieved in the patent and that disclosed in D1 is thus entirely valid.

- 1.2.11 D1 unambiguously discloses a depth of engagement of the teeth on the rolls of 0.09", a pitch of the teeth of 0.1" and a clearance on the sides of the teeth of 0.01", failing however to provide an unambiguous disclosure of the clearance at the tip. Starting from D1 and wishing to find a suitable tooth height, the skilled person knows that tooth height can be calculated as the sum of the engagement depth and the tooth tip clearance. In wishing to solve the objective problem of providing a suitable tooth height, the skilled person would refer to e.g. D5 which discloses (see Fig. 4, para. [0015] of D5) a larger clearance at the tips of the teeth than on their sides in order to avoid pinching at the tips of the material undergoing stretch. This thus provides the skilled person with an example of what a 'suitable tooth height' might be, which they would apply to D1 by providing a greater clearance at the tooth tip than on its sides. The resultant tooth height would thus be (0.09" engagement depth) + (> 0.01" tip clearance) i.e. greater than the pitch of 0.1". The skilled person would thereby solve this partial objective technical problem and reach the claimed solution without exercise of an inventive step.
- 1.2.12 With both partial objective technical problems being solved and the respective claimed solutions being reached without the skilled person becoming inventively active, the subject-matter of claim 1 lacks an

inventive step such that the ground for opposition under Article 100(a) EPC prejudices maintenance of the patent as granted. The main request is thus not allowable.

2. *Auxiliary request 1*

Article 123(2) EPC

The subject-matter of claim 1 does not meet the requirement of Article 123(2) EPC.

2.1 Claim 1 of this request includes the added feature 'for each of the rolls, the surface between any two adjacent teeth being flat'.

2.2 This wording cannot explicitly be found anywhere in the description as filed. It appears to be derived solely from the Figs. 2 and 3, both of which are indicated to merely be of a schematic nature, such that no information can be derived directly and unambiguously therefrom concerning the surface defined, contrary to Article 123(2) EPC. Likewise, even if such schematic drawings were considered to disclose the added feature, both Figs. 2 and 3 disclose many further features of the teeth in combination beyond simply the surface between any two being flat, such as, for example in Fig. 2, a specific tooth shape and engagement depth D while Fig. 3 also discloses a specific tooth shape but with a much greater clearance between the 'mating' teeth. The isolation of a single feature from these figures in which many more are disclosed in combination would thus also contravene Article 123(2) EPC.

2.3 The respondent's argument regarding Fig. 1 showing the discontinuity between any tooth wall and the flat

surface between the teeth also fails to provide a direct and unambiguous basis for the claimed subject-matter. Even if the 'discontinuity' identified by the respondent were considered as an indication of an angled transition from the surface of the tooth wall to the surface between the teeth, this in no way allows a conclusion to be drawn that the surface between any two adjacent teeth is therefore flat; a convex curved surface between any two adjacent teeth is equally possible, and indeed arguably even preferable from an ease of manufacture point of view.

2.4 With the subject-matter of claim 1 lacking basis in the application as originally filed, auxiliary request 1 is not allowable.

3. *Auxiliary request 2*

Article 56 EPC

The subject-matter of claim 1 does not involve an inventive step.

3.1 Relative to claim 1 of the main request, claim 1 of the present request has been amended to include the feature that the sheet processing apparatus is configured to stretch the base sheet to a stretch ratio of 50% to 400%. As already found in point 1.2.8 above, a stretch ratio of 150% is disclosed in D1 (see page 20, line 2) such that this newly added feature does not contribute a further differentiating feature to the two already identified over D1 in claim 1 of the main request. It thus follows that the inventive step finding for the subject-matter of claim 1 of the main request applies equally, and with the same reasoning, to the subject-

matter of claim 1 of the present request.

3.2 As regards the respondent's argument that the incremental stretching systems of D1 did not anticipate the single stage stretching achieved in the patent, this is not accepted. It is noted that the scope of claim 1 includes both single stage and multi-stage stretching in order to achieve the claimed stretch ratio range; no specific limitation to just one of these options is claimed. Without an explicit limitation in claim 1 to indicate that the stretch ratio is achieved in a single stage, the Board can see no reason to interpret the claim in such a restricted manner. There is also no other claim wording present which could be considered to implicitly limit the scope of the claim to a single stage stretching.

3.3 The respondent's reference to examples in the patent to indicate that single stage stretching was intended in claim 1 is not persuasive. The scope of protection is defined by the claims' wording which, in the present claim 1, clearly encompasses the possibility of multiple pass stretching; nothing limits the claim to be interpreted as achieving the claimed stretch ratio in a single pass. Indeed the patent also mentions multiple stage stretching in para. [0054] with the indication that increased stretchability can thereby be imparted to the base sheet.

3.4 It is furthermore noted that the examples given in Table 1 of the patent achieve a maximum stretch ratio of 237% for a highly stretchable sheet undergoing a single pass through the rolls (see para. [0066], line 1). With claim 1 of the patent including stretch ratios of up to 400%, this is further evidence that the claimed apparatus also encompasses the possibility of

multiple passes of the base sheet through the rolls in order to achieve such high stretch ratios.

3.5 It thus follows that, with the subject-matter of claim 1 lacking an inventive step (Article 56 EPC), auxiliary request 2 is not allowable.

4. *Auxiliary request 3*

Admittance

4.1 Having been filed just one month prior to the oral proceedings, the admittance of this request is at the discretion of the Board (see Article 13(1) of the Rules of Procedure of the Boards of Appeal, RPBA). In order to meet at least the requirement of economy of procedure in Article 13(1) RPBA, requests including new claims filed at such a late stage of proceedings should be clearly allowable in the sense that they overcome all outstanding objections and that they do not introduce new objections.

4.2 As regards general considerations for the request, claim 1 is now directed to a process of producing a pull-on garment which takes the appeal in a completely different direction to that pursued in the previous requests directed to a sheet processing apparatus. Having been filed just one month prior to the oral proceedings, this divergent direction pursued introduces significant complexity. This situation is exacerbated by no arguments in support of the subject-matter of claim 1 involving an inventive step having been provided in writing when filing the new request. The appellant and the Board would thus be faced with the situation of becoming aware of arguments in support of an inventive step for the first time on the day of

oral proceedings, were this request admitted into the proceedings.

4.3 In substance, claim 1 essentially comprises a combination of claims 1, 6 and 12 as granted. Moreover, other than those already submitted for the main request, the sole argument presented by the respondent at oral proceedings in support of why the subject-matter of claim 1 at least *prima facie* should be considered as involving an inventive step was that D1 failed to disclose a sheet according to claims 1 and 6 as granted used in a pull-on garment. This is, however, not accepted since page 7, lines 3 to 5 of D1 discloses a training pant comprising a stretched fabric layer, which fabric layer corresponds to the base sheet of claims 1 and 6 as granted. It is furthermore noted, as also argued by the appellant, that the method steps of claim 1 associated with producing the pull-on garment are wholly conventional, the processes of folding, joining and cutting being well known to the skilled person in this field. As such, and in view of the finding of lack of inventive step on the main request, the subject-matter of claim 1 does not *prima facie* involve an inventive step.

4.4 As a consequence, auxiliary request 3 is *prima facie* not clearly allowable. The Board thus exercised its discretion not to admit auxiliary request 3 into the proceedings (Article 13(1) RPBA).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked

The Registrar:

The Chairman:



M. H. A. Patin

M. Harrison

Decision electronically authenticated