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Datasheet for the decision of 15 February 2024

Case Number: T 1738/22 - 3.2.04

Application Number: 10861095.7

Publication Number: 2654537

IPC: A47K10/42, B65B63/02, D21H27/00, A47K10/16

Language of the proceedings: EN

Title of invention:
A STACK OF PLURALITY OF CELLULOSE-CONTAINING ABSORBENT TOWELS AND A PROCESS FOR MANUFACTURING THE STACK.

Patent Proprietor:
Essity Hygiene and Health Aktiebolag

Opponent:
Kimberly-Clark Worldwide, Inc.

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

Catchword:

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Case Number: T 1738/22 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 15 February 2024

Appellant: (Opponent)	Kimberly-Clark Worldwide, Inc. 2300 Winchester Road Neenah WI 54956 (US)
Representative:	Dehns St. Bride's House 10 Salisbury Square London EC4Y 8JD (GB)
Respondent: (Patent Proprietor)	Essity Hygiene and Health Aktiebolag 405 03 Göteborg (SE)
Representative:	Essity Hygiene and Health AB Essity IP Department 405 03 Göteborg (SE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 8 April 2022 rejecting the opposition filed against European patent No. 2654537 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. de Vries
Members:	J. Wright
	C. Almberg

Summary of Facts and Submissions

I. The appeal was filed by the opponent against the decision of the opposition division to reject the opposition filed against the patent in suit.

II. The opposition division decided that the subject-matter of the claims as granted involved an inventive step.

III. Oral proceedings before the Board were held on 15 February 2024.

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

The respondent (patent proprietor) requests that the appeal be dismissed, i.e. that the patent be maintained as granted (main request). In the alternative, it requests that the patent be maintained as amended based on the claims of one of the auxiliary requests 1 to 5, 1 prim to 4 prim, and 1 bis to 4 bis, all filed with letter of 21 December 2022.

V. The independent claims of the main request read as follows:

"1. A stack of a plurality of cellulose-containing absorbent towels (3) for a dispenser (1), the towels being separable upon dispensing, characterized in that the towels (3) are produced with non-compressing de-watering technology and that the stack (2) has a density of at least 0.20 g/cm^3, and preferably above 0.25 g/cm^3 and more preferably above 0.32 g/cm^3."

"6. A process for manufacturing a stack (2) of a plurality of cellulose-containing towels (3) for a dispenser (1), wherein the stack (2) is conditioned to a predetermined moisture level, and wherein the method comprises the step of applying a predetermined pressure for a predetermined time, the pressure and time being dependent on the material in the towel (3) and the moisture level of the material and that the compressed stack of towels should be separable upon dispensing, and wherein the towels (3) are produced with non-compressing de-watering technology and that the stack (2) has a density of at least 0.20 g/cm^3, and preferably above 0.25 g/cm^3 and more preferably above 0.32 g/cm^3".

Auxiliary request 1 reads as for the main request but deletes the words "at least 0.20 g/cm^3, and preferably" from the independent claims 1 and 6.

Auxiliary request 2 reads as for the main request but deletes the words "at least 0.20 g/cm^3, and preferably above 0.25 g/cm^3 and more preferably" from the independent claims 1 and 6.

Independent claims 1 and 5 of auxiliary request 3 read as for the independent claims 1 and 6 of the main request except that at the end of the respective claims the following wording is added: "wherein the non-compressing de-watering technology is TAD, or UCTAD, or ATMOS technology."

Independent claims 1 and 5 of auxiliary request 4 read as for the independent claims 1 and 6 of the main request except that at the end of the respective claims the following wording is added: "wherein the towels (3)

are separable one by one from the stack (2) upon dispensing."

The sole independent claim (claim 1) of auxiliary request 5 reads as for claim 6 of the main request except that at the end of the claim, the following wording is added: ", wherein the predetermined pressure should not exceed P=200bar."

The auxiliary requests 1 prim to 4 prim read as for the correspondingly numbered auxiliary requests 1 to 4 except that they delete the method claims.

The auxiliary requests 1 bis to 4 bis read as for the correspondingly numbered auxiliary requests 1 to 4 except that they delete the device claims and the remaining process claims are renumbered accordingly .

VI. In the present decision, reference is made to the following documents:

D2: US 5535887

D3: US 4191609

D4: WO 2010/008331 Al

D6: US 2960023

D8: Wallenius Hans, employee of Essity Hygiene and Health AB, declaration dated 4 July 2018, first filed on 10 July 2018 during examination proceedings and refiled by the opponent as D7 with its grounds of appeal.

VII. The appellant-opponent's arguments can be summarised as follows: The combination of D4 with D6 takes away inventive step of the independent claims of the various requests. The combination of D2 with the skilled person's general knowledge takes away inventive step of

the independent device claims of the various requests having such claims.

VIII. The respondent-proprietor's arguments can be summarised as follows: The subject matter of the independent claims is inventive with respect to the cited prior art. In particular, although D2, D4 and D6 disclose compressing stacks to reduce their volume, because the starting density of the stacks is not known, and this could indeed be anything, even where the prior art discloses how volume changes during compression it is impossible to conclude what the density is after compression. Therefore, neither when starting from D2 or D4, would the skilled person have arrived at the claimed stack densities.

Reasons for the Decision

1. The appeal is admissible.

2. Background

The invention (see published patent specification paragraphs [0001] to [0006]) relates to a stack of a plurality of cellulose-containing absorbent [tissue] towels for a dispenser, the towels being separable upon dispensing, and to a process for manufacturing such a stack. Conventionally, in such a stack, air is trapped between the tissues, making for a relative bulky product to transport. It is known to compress stacks so that they take up less space.

According to the patent, by heavy compression of the [towel stack] products before packing them, substantial transport cost savings are made due to reduced pack dimensions. The object of invention, the patent

explains, is to significantly reduce the volume of stacked absorbent towels without sacrificing dispensing performance, amongst other things.

3. Interpretation of certain features of the independent claims

3.1 The first feature of claim 1 reads: "A stack of a plurality of cellulose-containing absorbent towels for a dispenser, the towels being separable upon dispensing". The independent process claim is directed to manufacturing "*a stack [...] for a dispenser*" and also defines that "towels should be separable upon dispensing".

3.2 The skilled person reads the term *for* as meaning *suitable for*. Thus, the towel stack must be fit for the purpose of dispensing and doing so in such a way that a towel is separable from the stack when being dispensed. Such a stack has this suitability, whether or not it is in the process of being manufactured, whether or not it is wrapped, and whether or not it is in a dispenser. Thus the claims are not limited to stacks in the condition they would be in when they are in a dispenser, they only have to be suitable for being [subsequently] placed in a dispenser from where towels can be individually dispensed.

3.3 Consequently, the certain density and preferable/more preferable densities of the claimed stack do not necessarily reflect those of the stack in the dispenser. For example, contrary to how the respondent-proprietor has argued, the claim also covers a towel stack which is still wrapped, whether or not, on being unpacked and placed in a dispenser, such a stack might undergo an expansion. This is all the more true since

the patent itself explains that, for the purposes of the invention, density is to be measured without removing such a wrap if one is present (see paragraphs [0016] and [0017]). Indeed, at the oral proceedings the respondent acknowledged that some expansion might take place for the claimed stack upon removal of the wrapper. It is with this in mind that comparison with the prior art must be made, and not, as the opposition division appears to have done (see impugned decision, point II 5.4.2) by considering only what the prior art disclosed about the density towel stacks would have in a dispenser whilst ignoring what it discloses about stacks' higher densities prior to their being placed in a dispenser.

4. Main request, claim 1, inventive step starting from D2 with the skilled person's general knowledge

4.1 D2 discloses a stack of tissue towels that are separable on dispensing (see column 1, lines 36 to 54 and column 5, lines 23 to 33 and figures 1 to 4). These are compressed (see column 1, lines 9 to 11), but it is not said what they are made of nor does it state the density of the stack after compression. However, it is not disputed that tissues that contain cellulose are ubiquitous and non-compressing dewatering technologies, such as Through Air Dried (TAD), were an established way of making tissues at the relevant date. Moreover, D2 suggests (column 4, lines 45 to 50) that D3 would offer a suitable way of making tissues for D2's invention and D3 (see column 5, lines 15 to 21 and column 6, lines 8 to 25 with figure 6, reference 55) discloses both cellulose containing tissue and manufacture by non-compressing dewatering technology. So both these features, if not implicit, would be immediately evident to the skilled person from their

general knowledge when tasked with implementing D2's teaching.

4.2 Therefore, the question of inventive step hinges on whether it would have been obvious to the skilled person, when implementing D2's teaching with a cellulose containing, non-compression dewatering technology tissue, to arrive at the claimed stack density.

4.2.1 In this regard, the Board has no reason to doubt the uncontested information provided by the respondent-proprietor's technical expert, Mr Hans Wallenius (see D8, point 1) that the density of a conventional stack of tissue paper manufactured using non-compressing de-watering technology, such as TAD tissue paper, would typically be about 0.12 g/cm^3. Nor is the Board convinced that this density would represent a conventional stack *after* it had been compressed by a degree greater than would be associated with conventional folding and forming of the stack (cf. respondent-proprietor's letter of 5 May 2023, point 4.1. 50). Rather, the respondent's expert (see D8, point 2) explains that the density of such a conventional stack is significantly higher than the densities of individual tissues due to air entrapment between neighbouring sheets amongst other things - which would not be so *after* a further compression subsequent to forming the stack. In the Board's view, when carrying out the teaching of D2, it would have been obvious to the skilled person to start from such a conventional stack of TAD tissues, which, before compression, would thus adopt its free height FH, with some air being entrapped between sheets and having a [bulk] density of 0.12g/cm^3 (cf. D2, figure 2).

4.3 With regard to the starting density of the stack, the respondent-proprietor has argued that, whilst D8 discloses a typical density for a TAD stack, this cannot be assumed to be what is used when carrying out D2's teaching because D2 does not disclose any starting density, so the relative heights of stacks after compression can disclose no information about the final density of the stack. In particular, D2's teaching might be applied to a much less dense stack, depending on factors such as how the product was folded.

4.3.1 The argument is predicated on the idea that there can be no typical density of a stack of TAD tissues before it is compressed. This would contradict the statement of the respondent-proprietor's own expert (D8, point 1 - typical density of a conventional TAD stack) and the respondent-proprietor's confirmation at the oral proceedings before the Board that this data can be relied upon (and which the Board does not doubt). Thus, in the Board's view, the typical stack density for a conventional TAD stack given in D8 (0.12 g/cm^3) represents a realistic starting density of a stack of TAD tissues from which the skilled person would typically have started, when putting into practice D2's teaching. Whether or not the skilled person might also have contemplated applying D2's teaching to a non-conventional stack having an *atypical* density, such as one that was particularly lightly packed, and in doing so might not achieve final densities falling within the ambit of the claim, does not negate the fact that they would in any case have started from a conventional stack having a *typical* density, as a matter of obviousness. Therefore, the argument of the respondent-proprietor is moot.

4.3.2 Turning now to the question as to what the final density a stack of TAD tissue D2 would have when being compressed according to D2's teaching, D2 discloses the need to compress a stack of individual tissues for transporting purposes, and proposes a two-stage compression process to do so (see column 2, lines 6 to 11 and column 3, lines 10 to 32). These stages are explained in terms of stack height reductions from free height (FH), in other words a non-compressed state as shown in figure 2. The first stage compression (FSC) reduces stack height to 70 to 99% of FH (see column 5, lines 10 to 22, claim 3 and figure 3). The subsequent second stage compression (SSC) further reduces stack height to as little as 25% of FH (see column 6, lines 21 to 42, claim 4 and figure 4). D2 explains (column 8, lines 5 to 25) that in the second stage compression, not only is the air removed from between tissues and their individual plies but also the fibre structure itself is compressed.

4.3.3 In the Board's view, the footprint of the stack would, to all intents and purposes, remain constant during compression (cf. D2, figures 1 to 3). It goes without saying that its mass would also remain constant. Therefore, the stack's relative height reductions equate to its relative volume reductions it undergoes during compression. The relative stack density resulting from compression is inversely proportional to this relative height (density = stack mass/stack volume). It follows from this that, compressing a conventional TAD tissue stack from its free height with a density of $0.12 g/cm^3$ to 25% of free height (D2's highest compression) results in a fourfold density increase to $0.48 g/cm^3$. Bearing in mind that the Board does not read the claim as defining densities of tissue stacks only *when in a dispenser,* this resulting density

(0.48 g/cm^3) considerably exceeds the claimed minimum density (0.2g/cm^3) and indeed also the claimed more preferable higher densities of 0.25g/cm^3 and 0.32g/cm^3. Even D2's lower limit for its preferred (less intense) compression height reduction of 30% of FH (see column 6, lines 37 to 42) would result in a density increase of 3.3 times to 0.39g/cm^3, thus applying this less intense compression to a typical TAD stack would also reach a density that exceeded all the density values defined in claim 1 (at least 0.2g/cm^3, preferably 0.25g/cm^3 and more preferably 0.32g/cm^3).

4.4 For these reasons, claim 1 lacks an inventive step when starting from D2 with the general knowledge of the skilled person.

5. Main request, claim 1, inventive step starting from D4 with D6

5.1 D4 discloses a stack of towels (see abstract and figure 6). The towels contain cellulose (see page 16, middle paragraph) and are separable on dispensing (see for example page 1, lines 22 to 25 and page 18, lines 30 to 34). The towels are made by a TAD process, thus a non-compressing dewatering technology (see page 16, lines 1 to 7). D4 does not say what density these stacks of TAD tissues would initially have. At most (see page 15, lines 28 to 33), only a range of densities of the base tissue paper is given. Applying the same approach as the Board took when starting from D2, a conventional TAD tissue stack has a typical density of 0.12g/cm^3 (cf. D8, point 1) and the Board holds that this can be assumed to be a realistic starting density of D4's TAD tissues, whether or not there might be other possible, atypical starting densities.

5.2 D4 also disclosed to compress the stack to reduce the space it occupies (see page 15, lines 6 to 15), however, D4 does not disclose any degree of compression, nor the density of the resulting stack. Therefore, it cannot be concluded that what is claimed is a greater compression than that contemplated by D4. Thus, contrary to how the opposition division reasoned (see impugned decision, point II 5.5.4 and 5.5.7) the objective technical problem is not one of further reducing transport costs but rather can be formulated as: How to implement the teaching of D4, including finding a suitable density for the tissue stacks once compressed.

5.3 In the Board's view, the skilled person, with their eye on solving the objective technical problem, would have looked to D6 because it discloses how to compress tissue stacks (column 1, lines 14 to 18), and gives examples of the height reduction these would be subjected to, from which an estimate of the resulting stack density can be made (see paragraph bridging columns 4 and 5).

In this regard, the opposition division (see the impugned decision point II 5.5.7) reasoned that, differences in the type of paper disclosed in D4 and D6 (D4 being TAD tissue which is not creped and D6 being a creped tissue according to its assessment) make D4 and D6 incompatible teachings which the skilled person would not combine, a position also adopted by the respondent-proprietor. The Board disagrees.

Firstly, D4 (see passage bridging pages 15 and 16) discloses that the tissue can be creped or non-creped, creping taking place in wet or dry conditions and, in the next sentence, that the tissue can be produced by a

TAD process and dried on a Yankee cylinder (which the skilled person knows to crepe paper). Therefore, D4 discloses both creped and non-creped TAD tissue. Secondly, D6 discloses (see column 1, lines 21 to 25) that the tissue paper with which it is concerned is *usually* creped (emphasis added by the Board). The corollary to this is that D6's teaching also applies (perhaps less usually) to non-creped papers. Since Both D4 and D6 relate to creped or non-creped tissue paper the Board sees no incompatibility between their teachings.

5.4 Turning now to D6, it discloses a machine that considerably compresses stacks of tissues so that their height is permanently reduced (see column 1, lines 59 to 66). Contrary to how the respondent-proprietor has argued, stacks are compressed in such a way that not only air between tissues is removed but also the fibres of the sheets are ironed, that is flattened (see column 5, lines 7 to 18).

How this is achieved is described in column 2, lines 13 to 59 with figure 2: Tissue stacks are conveyed and compressed between two opposing conveyor tracks. Substantially uncompressed stacks enter the machine at an infeed section A and adopt a uniform height by being lightly pressed in a section B. Beyond this section, the tracks gradually converge in a section C, thus they gradually subject stacks to an increasing compression force as the height of tissue stacks is gradually reduced until a section D is reached. There, the tracks are closest together and run parallel, thus maintaining the maximum compression force on the stacks as they travel the length of section D. The tracks diverge in a section E so that the compression force on the stacks

is disengaged as they are lead to an out-feed section F.

D6 explains (see column 4, line 53 to column 5, line 18) that the resulting stack has a height which is about 10 to 22% of its [initial] uncompressed height. Applying the same approach as the Board used when examining inventive step starting from D2 and considering the conventional TAD tissue stack with a typical density of 0.12g/cm^3 (cf. D8), a reduction in stack height, even at D6's upper limit of 22% of original height would result in a new volume of 22%, that is 0.22, of the original volume. The corresponding density change is the inverse of this, that is an increase of about 4.5 times. Therefore, the new density after compression would be 0.12g/cm^3 x 4.5 = 0.54g/cm^3. This new density would exceed all the density values defined in claim 1 (at least 0.2g/cm^3, preferably 0.25g/cm^3 and more preferably 0.32g/cm^3).

5.5 Therefore, the combination of D4 with D6 would have led the skilled person to the subject matter of claim 1, as a matter of obviousness. It follows that the subject matter of the device claim 1 also lacks an inventive step when considering the combination of D4 with D6.

6. Main request, process claim 6, inventive step starting from D4 with D6

6.1 Claim 6 is directed to a process for manufacturing a tissue and its features correspond to those of claim 1 expressed in terms of process steps except that it also adds the features of the stack being *conditioned to a predetermined moisture level* and that to manufacture the stack a *predetermined pressure is applied for a predetermined time*.

6.2 Both these additional features are known from D6 (see column 4, lines 64 to 72). There D6 explains that *normal* moisture conditions apply - in any case controlling moisture content would appear to be implicitly necessary when manufacturing paper products. In the same passage it is explained that a pressure of 750 pounds per square inch (= 51 Bar) is applied for 1 second. Indeed, as has been explained, section D of D6's machine (see figure 2), with its parallel compressing tracks by means of which tissue stacks are compressed and conveyed at a constant speed can but exert a predetermined pressure for a predetermined time.

6.3 Therefore, for these reasons and those already explained for claim 1, the combination of D4 with D6 takes away an inventive step of process claim 6.

7. Auxiliary requests

7.1 Without prejudice to the question of admittance of the auxiliary requests, all of them fail for broadly the same reasons as have been explained for the main request.

7.2 The independent device and process claims of auxiliary requests 1 and 2 make mandatory the higher preferable ($0.25 g/cm^3$) and more preferable ($0.32 g/cm^3$) stack densities of corresponding claims of the main request, respectively. However, as has been explained for the main request, whether starting from D2 with the skilled person's general knowledge or D4 with D6, these values were both rendered obvious. Therefore, these requests fail on inventive step for the same reasons as the main request.

7.3 Auxiliary request 3 specifies in both the independent device and process claims the non-compressing dewatering technology of the main request as being TAD amongst others. As explained for the main request, the use of TAD when starting from D2 was obvious and when starting from D4 directly and unambiguously disclosed (see D4, page 16, lines 1 and 2). Therefore, this feature cannot contribute an inventive step.

7.4 Auxiliary request 4 merely clarifies in the independent device and process claims that towels being separable upon dispensing as claimed in the main request means they are separable one by one, which is explicitly disclosed in D2 (see column 1, lines 45 to 49) and D4 (see page 18, last three lines), thus this clarification cannot contribute an inventive step.

7.5 Auxiliary request 5, which only has a process claim, adds to the process claim of the main request that the predetermined pressure should not exceed 200 Bar. However, as has already been explained for the main request, D4 discloses subjecting towels to a pressure of 51 Bar, thus well within the claimed maximum of this request. Therefore, the feature cannot contribute an inventive step.

7.6 Auxiliary requests 1 prim to 4 prim delete the process claims of the correspondingly numbered requests whilst auxiliary requests 1 bis to 4 bis delete the device claims. However, as has been explained, the cited prior art takes away inventive step of both the independent device and process claims of auxiliary requests 1 to 4. Therefore, all the requests 1 prim to 4 prim and 1 bis to 4 bis fail for the same reasons.

8. Since, contrary to the decision's finding, the main request fails for lack of an inventive step, Article 56 EPC, the decision must be set aside. Moreover, as the patent amended according to the remaining auxiliary requests fails to meet the requirements of the EPC the Board must revoke the patent in accordance with Article 101(3)b EPC.

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:

G. Magouliotis A. de Vries

Decision electronically authenticated