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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/438,443	04/24/2015	Bjorn LARSSON	1018798-000805	6352

105718 7590 09/02/2020

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EXAMINER	
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ART UNIT	PAPER NUMBER
3724	

NOTIFICATION DATE	DELIVERY MODE
09/02/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BJORN LARSSON, PER MOLLER, DAVID SAHLIN, and LARS THOREN

Appeal 2019-005194
Application 14/438,443
Technology Center 3700

Before JENNIFER D. BAHR, MICHAEL J. FITZPATRICK, and WILLIAM A. CAPP, *Administrative Patent Judges*.

BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1, 2, and 5–24. We have jurisdiction under 35 U.S.C. § 6(b). An oral hearing in accordance with 37 C.F.R. § 41.47 was held on August 18, 2020.

We AFFIRM.

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Essity Hygiene and Health AB. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to "a separation unit for separating a perforated web material such as paper towels, tissue paper, or nonwoven material along perforation lines." Spec. 1:3–5. Claim 1, reproduced below, is illustrative of the claimed subject matter.

> 1. A separation unit for separating a web material along preformed lines of weakness, said separation unit having a width direction and comprising
>
> at least a first roller having a rotational axis extending in said width direction and a web width extending in said width direction, and
>
> at least a second roller having a rotational axis extending parallel with said rotational axis of said first roller and a web width extending in said width direction, said rotational axis of said second roller being positioned at a distance from said rotational axis of said first roller, said distance extending in a direction perpendicular to said width direction,
>
> wherein each of said first and said second rollers is provided with at least one protrusion element extending perpendicularly from said axes,
>
> wherein each of said protrusion elements has a maximum width in said width direction, a maximum radial extension from said rotational axes, an inner portion adjacent to said rotational axes, and an outer portion remote from said rotational axes,
>
> wherein said outer portions of said protrusion elements on said first roller are arranged in a staggered relationship with said outer portions of said protrusion elements on said second roller,
>
> wherein said outer portions of said protrusion elements on said first roller are partially overlapping with said outer portions of said protrusion elements on said second roller with a radial overlap length, thus forming an undulating passage for a web material between said rollers,
>
> wherein said distance between said rotational axes of said first and said second rollers is adjustable, enabling said radial overlap length in said undulating passage to be variable,

wherein a biasing means arranged with said first and second rollers enables an automatic adjustment of said distance between said rotational axes of said first and said second rollers, and

wherein the separation unit is configured such that the preformed lines of weakness will rupture in the separation unit to separate a sheet of web material,

wherein said first roller is movably suspended, perpendicularly to said first rotational axis, and wherein said biasing means is arranged to bias said first roller towards said second roller,

wherein the separation unit further comprises a cradle, said cradle being pivotably suspended to pivot about a pivot axis substantially parallel with said rotational axes, wherein said first roller is suspended in said cradle.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Ko	US 2004/0041330 A1	Mar. 4, 2004
Kling	US 2007/0236110 A1	Oct. 11, 2007
Hjort	US 2013/0105614 A1	May 2, 2013

REJECTIONS

Claim 10 stands rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

Claims 1, 2, 5–17, 19, 20, 23, and 24 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ko and Hjort.

Claims 18, 21, and 22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ko, Hjort, and Kling.

OPINION

Indefiniteness

The basis of the Examiner's rejection under 35 U.S.C. § 112, second paragraph, is that "[t]he term 'about' in claim 10 is a relative term which renders the claim indefinite." Non-Final Act. 4. According to the Examiner, "[t]he term 'about' is not defined by the claim, the [S]pecification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention." *Id.* at 4–5.

Appellant's Specification discloses that "the stopper device may be movable between at least two fixed positions to define at least two corresponding end positions for the first roller." Spec. 7:1–2. The Specification additionally discloses that

> in a fixed position of the stopper device, the radial overlap length may be approx. 6 mm, or approx. 7 mm, or approx. 8 mm in a respective end position of the first roller. In this manner a nip formed between the first and second rollers may be set for a particular web material such that a sheet of web material may be separated from a perforated web material in the separation unit.

Spec. 7:7–11. Based on this disclosure, a person skilled in the art would understand that the stopper device is movable to three fixed positions, a first of which sets the radial overlap length in a respective end position of the first roller (when the cradle is biased against the stopper device) at approximately 6 mm, a second of which sets the radial overlap length in the end position at approximately 7 mm, and a third of which sets the radial overlap length in the end position at approximately 8 mm. The radial overlap length of "about 6 mm" recited in claim 10 appears to pertain to the

stopper device placed in the first position described in the Specification, namely, the one that sets the radial overlap length to approximately 6 mm. Although consistency in terminology throughout the Specification and claims would certainly be preferable, for purposes of our review of the indefiniteness rejection before us, we understand the term "about" in claim 10 to be synonymous with "approx." used in the Specification.

The term "about" is a term of degree. It is well established that when a "word of degree" is used, the patent application must provide a standard for measuring that degree. *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010) (quoting *Seattle Box Co., Inc. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984)). The definiteness of a term of degree is problematic if its baseline for comparison is unclear to those of ordinary skill in the art. *Liberty Ammunition, Inc. v. United States*, 835 F.3d 1388, 1395 (Fed. Cir. 2016).

> We especially take caution when presented with terms of degree following the Supreme Court's decision in *Nautilus, Inc. v. Biosig Instruments, Inc.*, [572 U.S. 898], 134 S.Ct. 2120, 189 L.Ed.2d 37 (2014), which instructs that a claim must "inform those skilled in the art about the scope of the invention with reasonable certainty" to meet the definiteness requirement of 35 U.S.C. § 112, ¶ 2, *id.* at 2129. While our post-*Nautilus* cases indicate that terms of degree are not "inherently indefinite" in light of the Supreme Court's decision, we have recognized that claims having terms of degree will fail for indefiniteness unless they "provide objective boundaries for those of skill in the art" when read in light of the specification and the prosecution history.

Id. at 1395–96 (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370–71 (Fed. Cir. 2014)).

Moreover, for applications pending before the United States Patent and Trademark Office (USPTO), a claim is properly rejected as indefinite under 35 U.S.C. § 112, second paragraph, if, after applying the broadest reasonable interpretation in light of the specification, the metes and bounds of a claim are not clear because the claim "contains words or phrases whose meaning is unclear." *In re Packard*, 751 F.3d 1307, 1310, 1314 (Fed. Cir. 2014) (per curiam) (approving, for pre-issuance claims, the standard from MPEP § 2173.05(e)); *see also Ex parte McAward*, Appeal 2015-006416, 2017 WL 3669566, at *5 (PTAB Aug. 25, 2017) (precedential) (adopting the approach for assessing indefiniteness approved by the Federal Circuit in *Packard*).

> [W]hen the USPTO has initially issued a well-grounded rejection that identifies ways in which language in a claim is ambiguous, vague, incoherent, opaque, or otherwise unclear in describing and defining the claimed invention, and thereafter the applicant fails to provide a satisfactory response, the USPTO can properly reject the claim as failing to meet the statutory requirements of § 112(b) [i.e., the successor to 35 U.S.C. § 112, second paragraph]).

Packard, 751 F.3d at 1311.

In the context of the phrase "about 6 mm," the ordinary and customary meaning of the term "about" is near or almost. However, this is not sufficiently helpful to provide an objective boundary for the scope of this claim limitation. When considered in light of the aforementioned disclosure on page 7 of Appellant's Specification, one possible interpretation of "about 6 mm" is 6 mm, plus or minus reasonable manufacturing tolerances when fabricating the components of the separation unit.

Appellant offers a different interpretation of "about 6 mm." *See* Appeal Br. 8. In particular, in light of the disclosure of three possible

overlap lengths (approximately 6 mm, or approximately 7 mm, or approximately 8 mm) in the Specification, Appellant asserts that "'about 6 mm' is provided with one significant figure and may be distinguished from 7 mm. Thus, any radius of 5.50 to 6.49 (which round to 6) would be 'about 6 mm.'" *Id.*

The Examiner does not agree with Appellant's significant figure analysis. *See* Ans. 3–4. According to the Examiner, "'about 6 mm' (as stated in the claim) does not directly translate to the range of 5.50 to 6.49 mm" and, "[a]t most, the [paragraph on page 7 of the Specification, quoted above,] discloses that approx. 6 mm is not the same as approx. 7 or 8 mm, as they are indicated separately." *Id.* at 4. The Examiner states that other interpretations of "about 6 mm" are possible, including the possibility that "this only provides an upper limit to the approx. 6 mm" or that "[t]he range in question could also be limited to 5.99mm to 6.1 mm," which "leads to confusion as to the scope of this limitation." *Id.* The Examiner concludes that "[b]ecause the objective boundaries of 'about 6 mm' are not taught in the specification, therefore such phrasing is considered to be indefinite." *Id.*

Given the different plausible interpretations of "about 6 mm" discussed above, and the absence of any guidance in Appellant's Specification that provides objective boundaries to those of ordinary skill in the art, the Examiner's position that the metes and bounds of "about 6 mm" is not clear is well-grounded, and Appellant does not apprise us of error in that determination. Accordingly, we sustain the rejection of claim 10 under 35 U.S.C. § 112, second paragraph as indefinite.

Obviousness—Ko and Hjort

In contesting the rejection based on Ko in view of Hjort, Appellant presents arguments without specific reference to any particular claim. *See* Appeal Br. 9–15. Thus, we decide the appeal of the rejection of claims 1, 2, 5–17, 19, 20, 23, and 24 as unpatentable over Ko and Hjort on the basis of claim 1. The remaining claims 2, 5–17, 19, 20, 23, and 24 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv) (permitting the Board to select a single claim to decide the appeal as to a single ground of rejection of a group of claims argued together).

The Examiner finds that Ko discloses a separator having most of the features of claim 1, including, in pertinent part, a first roller (separating roller 156) and a second roller (feeding roller 154), but that

> Ko fails to teach wherein each of said first and said second rollers is provided with at least one protrusion element, wherein each of said protrusion elements has a maximum width in said width direction[,] a maximum radial extension from said rotational axes, an inner portion adjacent to said rotational axes, and an outer portion remote from said rotational [axes,] wherein said outer portions of said protrusion elements on said first roller are arranged in a staggered relationship with said outer portions on said second roller, and wherein said outer portions[] of said protrusion elements on said first roller are partially overlapping with said outer portions of said protrusion elements on said second roller, with a radial overlap length (as required by claim 1); said protrusion elements are disc elements (as required by claim 15).

Non-Final Act. 5–7 (boldface omitted).[2]

[2] Ko's separating rollers 156 appear to be protrusion elements protruding radially outwardly from smaller diameter rotation shaft 162, in a direction perpendicular to the rotational axis of rotation shaft 162, much like Appellant's protrusion elements 4 protrude radially outwardly from the

The Examiner finds that Hjort teaches rollers (drive roller 26 and engaging roller 28) for feeding a material, wherein the rollers are provided with at least one protrusion element (the rubber material on the outer edge of the roller). Non-Final Act. 7–8 (citing Hjort, Figs. 1–4; ¶ 35); *see id.* at 8 (providing an annotated reproduction of Hjort's Figure 3 to point out inner and outer portions of the protrusion elements). The Examiner finds that "the purpose of the outer portion is for better grip of the sheet material." *Id.* (citing Hjort ¶ 40).

According to the Examiner, "Ko and Hjort are both rollers for conveying sheet material, and a teaching of an outer grip for a roller will be equally applicable in both areas." Non-Final Act. 8. The Examiner thus determines it would have been obvious "to modify the device of Ko to incorporate the teaching of Hjort and add at least one protrusion of the outer portion to any of the rollers" because "[d]oing so . . . would allow the rollers to better grip . . . the material." *Id.* at 9.

Appellant argues that "Ko does not teach or suggest that the separation unit is configured such that the preformed lines of weakness will rupture in the separation unit to separate a sheet of web material." Appeal

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smaller diameter portion of first roller 2 (the element that resembles an elongate shaft, much like Ko's rotation shaft 162, identified as first roller 2 in Appellant's Figures 1a, 1b). *Compare* Ko, Fig. 10, *with* Appellant's Figs. 1a, 1b. Similarly, Ko's feeding roller 154 has larger diameter portions (i.e., protrusion elements) protruding from smaller diameter portions, much like Appellant's protrusion elements 4 protruding from second roller 3. *Compare* Ko, Fig. 10, *with* Appellant's Figs. 1a, 1b. Moreover, Ko's protruding separating rollers 156 are arranged in a staggered relationship with the larger diameter portions of Ko's feeding roller 154. *See* Ko, Fig. 10. Thus, although our analysis in reviewing the Examiner's rejection is based on the Examiner's findings, we note that Ko appears to disclose a separation unit comprising all of the structure recited in claim 1.

Br. 9. This argument does not identify error in the Examiner's rejection. As the Examiner points out, claim 1 does not positively recite a web of material with a preformed line of weakness. Ans. 4.

Claim 1 recites "wherein the separation unit is configured such that the preformed lines of weakness will rupture in the separation unit to separate a sheet of web material." Claims App. ii. The Examiner finds that the only structures required for rupturing preformed lines of weakness of web material are the sets of overlapping rollers and a biasing means applying a biasing force for moving the rollers close to each other. Ans. 4–5 (citing Spec. 4:9–5:6).[3] Appellant does not dispute this finding. *See generally* Reply Br. The Examiner further finds that "the modified device of Ko in view of Hjort teaches" this structure. Ans. 5. Indeed, consistent with the Examiner's findings, Ko's separation unit includes sets of overlapping rollers and a biasing means and, thus, comprises the structure the Examiner identifies as being required for rupturing preformed lines of weakness of web material. *See* Non-Final Act. 5–7; Ko, Figs. 10–11.

The Examiner additionally points out, correctly, that "[i]nclusion of the material or article worked upon by a structure being claimed does not impart patentability to the claims." Ans. 5 (quoting *In re Otto*, 312 F.2d 937, 940 (CCPA 1963)). Thus, even if the web of material with preformed lines of weakness were positively recited, such recitation would not impart patentability to the claimed apparatus.

Appellant argues that "the principle of operation [of] the Ko device is to release friction along the plane of two dispensed sheets," which,

[3] The Examiner cites to paragraphs of the publication of the present application (US 2015/0297042 A1).

according to Appellant, "requires enough tension to release the friction, but yet light enough tension that the sheets can slide past one another." Appeal Br. 13. In contrast, Appellant argues, Hjort teaches "creating such a great friction in the nip that the paper in the nip can be grasped and torn." *Id.* Appellant contends that "there is no reason why one skilled in the art would seek to modify the stack of media/paper feeder of Ko to grasp the media/paper so tight that it can be torn." *Id.*

Appellant's argument is not persuasive. As the Examiner points out, Ko's separation unit (separating rollers 156 and feeding roller 154) and Hjort's separation unit (engaging roller 28 and drive roller 26) both use friction force to grasp and feed media. Ans. 6; *see* Ko ¶¶ 108–110; Hjort ¶¶ 35, 37, 40. Ko recognizes that the proper level of friction force applied by separating roller 156 to the media depends on the type of media, including the thickness of the media. Ko ¶ 110. Ko also recognizes that the friction force is determined in part by the biasing force applied to separating roller 156 by tension spring 224. *Id.* ¶¶ 108–110. Although Ko is silent as to the effect that the outer surface of separating roller 156 has on the friction force applied to the media, a person having ordinary skill in the art would readily appreciate that the surface of separating roller 156 determines in part the coefficient of friction between separating roller 156 and the media. Hjort expressly addresses this issue and teaches providing a material having a high coefficient of friction, such as "a rubber or rubberlike material," on rollers 26, 28 to ensure that the rotation of drive roller 26 will be transferred to the media (roll 3). Hjort ¶ 35. A person having ordinary skill in the art, understanding that friction is needed between Ko's separating roller 156 and the media in order to discharge the media, would have appreciated that Hjort's teaching to provide a material having a high coefficient of friction on

the outer surface of rollers 26, 28 to transfer the rotation of the rollers to the media would be similarly applicable to the outer surface of Ko's separating roller 156 and feeding roller 154.

The Examiner additionally points out that Ko does not limit its teachings to any one type of media, and finds that "one having ordinary skill in the art would recognize that increased friction on the rollers to better grip the material may be needed, if the material being used in Ko requires more friction for the rollers to function as intended." Ans. 6. Thus, according to the Examiner, "one would look to the teaching provided by Hjort to add a gripping material to Ko's rollers to increase the friction on the roller as needed by the end user." *Id.* Appellant does not apprise us of error in the Examiner's findings and reasoning in this regard. The Examiner does not propose that the friction, as determined by the level of biasing force provided by tension spring 224 as well as by the coefficient of friction of rollers 156 and 154, be increased to a level that would result in tearing the media sheets handled by Ko.

In a related line of argument, Appellant contends that "the arrangement of Hjort, which is configured to grasp paper tight enough to allow tearing, would completely destroy the ability for the sheets [to] slide [past] one another in the Ko sheet feeding device." Appeal Br. 14. Thus, Appellant argues that "the proposed modification of Ko would change the principle of operation of the Ko sheet feeding device, as well as change the basic principle under which the Ko sheet feeding device was designed to operate." *Id.*

The Examiner responds by observing that "Appellant appears to be arguing a particular action of the dispensing device of Ko that is not actually stated in the Ko reference." Ans. 6. Like the Examiner, we do not find any

explicit discussion in Ko regarding sheets of media sliding past one another in Ko's sheet feeding device. As the Examiner points out, "Ko teaches that the friction of the roller effects the dispensing of material, and that the amount of friction is changed to find the optimum state." *Id.* (citing Ko ¶¶ 110–111). Thus, the Examiner determines that "applying Hjort does not destroy Ko's function, but is actually required by Ko in order for Ko to function at its optimum state." *Id.*

As is evident from our discussion above of the teachings of Ko and Hjort regarding the role of friction in feeding sheet media, and the parameters (biasing force and coefficient of friction) that affect the friction force acting on the sheet media, the Examiner's characterization of Ko is accurate. For the reasons set forth above, we do not agree with Appellant that modifying Ko as proposed by the Examiner in view of Hjort would change the basic principle of operation of Ko's separation unit or destroy its functionality.

Appellant submits that "[t]he Examiner's Answer has indirectly admitted that because Ko would only keep enough friction to operate as a sheet-by-sheet feeder unit then Ko, modified in view of Hjort, would still not be a grasping device unit, and would not be a rupturing-preformed-lines-of weakness-type of unit." Reply Br. 7–8. To the extent that Appellant is arguing that Ko's separation unit, even modified in view of Hjort, would be unable to generate and apply sufficient separating force to media transferred to the nip between rollers 154 and 156 to satisfy the claim limitation regarding rupturing of preformed lines of weakness, this is not a persuasive argument. As already acknowledged, Ko does not disclose dispensing media by rupturing preformed lines of weakness in a web of the media. Ko does, however, use friction to transfer a rotation force of separating

roller 156 to the media to effectively grasp and separate the media from feeding roller 154. As evidenced by Hjort, such a force is capable of rupturing a web of material at preformed lines of weakness when such preformed lines of weakness are present in the media. The force required to rupture preformed lines of weakness to separate a web material along the preformed lines of weakness depends on, among other things, the characteristics of the web material, the characteristics of the preformed lines of weakness, and the direction along which the force is applied to the material. Appellant's claim 1 does not specify the characteristics of the web or the lines of weakness and, thus, does not distinguish the claimed separation unit from Ko's separation unit.

For the above reasons, Appellant does not apprise us of error in the rejection of claim 1 as unpatentable over Ko and Hjort. Accordingly, we sustain the rejection of claim 1, as well as claims 2, 5–17, 19, 20, 23, and 24, which fall with claim 1, as unpatentable over Ko and Hjort.

Obviousness—Ko, Hjort, and Kling

In contesting the rejection of claims 18, 21, and 22 under 35 U.S.C. § 103(a), Appellant argues only that "Kling does not remedy the above-noted deficiencies of Ko and Hjort." Appeal Br. 15. For the above reasons, Appellant's arguments do not apprise us of error in the rejection of claim 1 as unpatentable over Ko and Hjort and, likewise, fail to apprise us of error in the rejection of claims 18, 21, and 22 as unpatentable over Ko, Hjort, and Kling, which we, thus, sustain.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
10	112, second paragraph	Indefiniteness	10	
1, 2, 5–17, 19, 20, 23, 24	103(a)	Ko, Hjort	1, 2, 5–17, 19, 20, 23, 24	
18, 21, 22	103(a)	Ko, Hjort, Kling	18, 21, 22	
Overall Outcome			1, 2, 5–24	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED