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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte AVNER LIBMAN, SHARON HADAD,
CAROLINE MYRIAM RACHEL OBADIA, NATAN MIZRAHI,
ERAN BEN-SHMUEL, ALEXANDER BILCHINSKY,
and ITZHAK CHAIMOV

Appeal 2018-003163
Application 13/080,072
Technology Center 3700

Before STEFAN STAICOVICI, MICHELLE R. OSINSKI, and
LEE L. STEPINA, *Administrative Patent Judges*.

OSINSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's
decision rejecting claims 1–39 and 43.² An oral hearing was held on

¹ We use the term “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Goji Limited. Appeal Br. 3.

² Claims 40–42 are cancelled. Appeal Br. 37 (Claims App.).

October 10, 2019.³ We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

THE CLAIMED SUBJECT MATTER

Claims 1, 32, 34, 37, 38, 39, and 43 are independent. Claims 1 and 43 are reproduced below.

1. An apparatus for applying radio frequency (RF) energy to an object in an energy application zone within a resonator cavity via at least one radiating element, the apparatus comprising:
 - a source configured for connection to the at least one radiating element to supply energy; and
 - at least one processing device configured to:
 - determine a value indicative of energy absorbable by the object at each of a plurality of frequencies; and
 - cause energy to be supplied to the at least one radiating element at two or more radio frequencies among the plurality of frequencies, such that the amount of energy supplied to the at least one radiating element varies across the two or more radio frequencies inversely with respect to the value indicative of energy absorbable by the object at the respective ones of the two or more radio frequencies.

43. An apparatus for applying radio frequency (RF) energy to an object in an energy application zone within a resonator cavity via at least one radiating element, the apparatus comprising:
 - a source configured for connection to the at least one radiating element to supply energy; and
 - at least one processing device configured to:
 - determine a value indicative of energy absorbable by the object at each of a plurality of radio frequencies;
 - determine a frequency, among the plurality of radio frequencies, at which the value indicative of energy

³ The record includes a transcript of the oral hearing (“Tr.”).

absorbable by the object exceeds a predetermined threshold; and
prevent energy from being supplied to the at least one radiating element at the determined frequency.

EVIDENCE

The Examiner relied on the following evidence in rejecting the claims on appeal:

Lentz	US 4,210,795	July 1, 1980
Fagrell	US 2002/0175163 A1	Nov. 28, 2002
Hadinger	US 2004/0206755 A1	Oct. 21, 2004

REJECTIONS

- I. Claims 1–39 and 43 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Final Act. 2–3.
- II. Claims 1, 8, 14, 16–20, 26–30, 32–39, and 43 stand rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements. *Id.* at 3–5.
- III. Claim 43 stands rejected under 35 U.S.C. § 102(b) as anticipated by Fagrell. *Id.* at 5–8.
- IV. Claims 1, 2, 4, 6, 8, 10–30, and 32–39 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Fagrell and Lentz. *Id.* at 8–24.
- V. Claim 31 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Fagrell, Lentz, and Hadinger. *Id.* at 19–28.

OPINION

Rejection I

Claims 1, 32, 37 38, and 43 recite “a source configured for connection to the at least one radiating element to supply energy.” Appeal Br. 25, 33,

35, 36, 37 (Claims App.). Claim 1 also recites limitations in which “energy [is] supplied to the at least one radiating element.” *Id.* at 25 (Claims App.).

The Examiner determines that this language renders the claim indefinite because “[i]t is unclear to the Examiner how the source . . . supplies energy” and “[i]t is unclear to the Examiner how the at least one radiating element receives energy.” Final Act. 2–3. The Examiner suggests the language be modified “to indicate that the source provides electrical power to the at least one radiating element to generate energy.” *Id.* at 2. The Examiner also asserts that “[i]t is unclear from [the] claim language of the relationship between [the] source’s supplying energy and the source’s connection to the radiating element” and “[i]t does not appear that the radiating element is used by the source, but merely connected to the source while the source is supplying energy.” Ans. 29.

Appellant argues that “the source is a source of electromagnetic energy that supplies energy to the radiating elements” in at least some embodiments. Appeal Br. 12–13 (citing Spec. ¶¶ 45, 99–105, 145–146); *see also* Spec. ¶ 99 (“A ‘source’ may include any components that are suitable for generating electromagnetic energy.”). Appellant also argues that “[a] person of ordinary skill in the electrical art would have readily recognized that energy = power x time, and thus when applying power for a duration of time, energy is supplied” such that a source can be considered to supply “energy,” and not just “power.” *Id.* at 13. Appellant also argues that the recitation that energy is supplied to the radiating element is “technically accurate” and “more appropriate than the Examiner’s suggested revisions” to recite that the radiating element generates energy. *Id.* at 14.

Appellant also indicates that the assertions in the Examiner’s Answer are “correct and indicate[] that the claims are clear” and moreover, that in view of the claim’s preamble, “it would have been clear to one of ordinary skill in the art that the source supplies energy to the radiating element which is then used to produce the RF energy applied to the object in the energy application zone.” Reply Br. 3–4; *see also* Spec. ¶ 45 (“[T]he terms ‘radiating element’ and ‘antenna’ may broadly refer to any structure from which electromagnetic energy may radiate and/or be received.”); ¶ 44 (“[A]n antenna as used herein may function as a transmitter, a receiver, or both, depending on particular application and configuration”); ¶ 46 (“Energy supplied to a transmitting antenna may result in energy emitted by the transmitting antenna (referred to herein as ‘incident energy.’). The incident energy may be applied to zone 9.”).

“[A] claim is indefinite when it contains words or phrases whose meaning is unclear.” *In re Packard*, 751 F.3d 1307, 1322 (Fed. Cir. 2014). (citing 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*). We agree with Appellant’s assertion that applying energy is the result of applying power for any amount of time, and, therefore, the recitation that energy is supplied (instead of saying “power is supplied”) to the radiating element is technically accurate. In other words, it appears that the claim language is clear regardless of whether the word “energy” or the word “power” (as suggested by the Examiner) is used. The Examiner has not sufficiently explained why the scope of the identified claim language would be unclear to one of ordinary skill in the art, and thus

has not established that claims 1–39 and 43 are indefinite. Accordingly, we do not sustain the rejection of claims 1–39 and 43 under 35 U.S.C. § 112, second paragraph as indefinite.

Rejection II

The Examiner also rejects claims 1, 8, 14, 16–20, 32–39, and 43 as indefinite on the ground that these claims are “incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.” Final Act. 3 (citing MPEP § 2172.01). More specifically, the Examiner determines first that there is an omission of the structural cooperative relationship between the processing device and the value indicative of energy absorbable by an object. The Examiner states that it is unclear “how the processing device is capable of determining the absorbable energy value of the object without the use of another structure to provide the value of absorption.” *Id.* The Examiner suggests including “the critical or essential structure to provide the absorption value, such as a sensor, lookup table, or software used to load the value by an operator.” *Id.* (citing Spec. ¶¶ 85, 147, 150; Figs. 14–15).

The Examiner maintains in the Answer that “[a]lthough [a] generic processing device can process, receive/transmit information and store information and algorithms, it is unclear from Appellant’s claim how the processor determines a value indicative of energy absorbable at each of a plurality of frequencies in light of the specification without additional structure claimed.” Ans. 31. The Examiner continues that “the processing device requires both additional algorithm steps and sensory structure (i.e., for example dual directional coupler) to be claimed to perform the

determination of the absorbable energy of the object.” *Id.* at 32 (citing Spec. Fig. 15, steps 1430–40). The Examiner further continues that “[w]ithout the critical structure claimed, one of ordinary skill in the art would have to improperly import claim limitations from the Appellant[’s] [S]pecification to allow the processor to determine (i.e. measure, calculate, or establish) a value indicative of energy absorbable. *Id.*

A claim which omits matter disclosed to be essential to the invention as described in the Specification or in other statements of record may be subject to rejection under pre-AIA 35 U.S.C. 112, second paragraph. *See In re Mayhew*, 527 F.2d 1229 (CCPA 1976); *In re Venezia*, 530 F.2d 956 (CCPA 1976); *In re Collier*, 397 F.2d 1003 (CCPA 1968). Here, any of the various structure disclosed in the Specification and pointed out by the Examiner may serve as the structural connection between the claimed elements and would be understood by one of ordinary skill in the art. Thus, we determine that the absence of the structure to assist in determining the absorbable energy value of the object in the claims is merely an issue of breadth and not indefiniteness. *See In re Gardner*, 427 F.2d 786 (CCPA 1970).

Secondly, with respect to claims 32, 34, and 36–38, the Examiner states that “[i]t is unclear how the processing device adjust[s] input *energy* supplied to the at least one radiant element” and suggests amending the claims “to indicate that the processing device adjusts input *power* supplied to the at least one radiant element.” *Id.* Final Act. 4 (emphasis added).

Thirdly, with respect to claim 39, the Examiner states that “[i]t is unclear how the processing device control[s] the source in order to apply *energy* at a plurality of radio frequencies” and suggests amending the claim “to indicate

that the processing device controls the source to provide *power* to the at least one radiant element in order to generate energy at a plurality of radio frequencies.” *Id.* Fourth, with respect to claim 43, the Examiner states that “[i]t is unclear how the apparatus applies a radio frequency energy to an object” and suggests “amending the body of claim 43 to indicate the applying of radio frequency energy to an object.” *Id.* at 4–5. Because the *body* of the claim does not recite the application of radio frequency to an object, the Examiner determines it is unclear (i) what is the purpose of the source and the radiating element; (ii) how a value indicative of energy absorbable by an object can be determined or exceed a predetermined threshold; and (iii) how energy from the radiating element at a determined frequency is prevented. *Id.* at 5.

For the reasons discussed above, we are not persuaded that the use of the term “energy” rather than “power” results in the omission of the essential structural cooperative relationship of elements. We also are not persuaded that the recitation of the application of radio frequency energy to an object in the *preamble*, rather than the *body*, of the claim results in the omission of the essential structural cooperative relationship of elements. Rather, we are persuaded that one of ordinary skill in the art would understand what is claimed given the ordinary meaning of the claim language when read in light of the Specification. *See Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (The test for definiteness under 35 U.S.C. § 112, second paragraph, is “whether those skilled in the art would understand what is claimed when the claim is read in light of the specification.”).

Accordingly, we do not sustain the rejection of claims 1, 8, 14, 16–20, 26–30, 32–39, and 43 under 35 U.S.C. § 112, second paragraph, as omitting the essential structural cooperative relationship of elements.

Rejection III

The Examiner rejects claim 43 as anticipated by Fagrell. Final Act. 5–8. Appellant argues that Fagrell fails to disclose at least a processing device configured to “determine a frequency . . . at which the value indicative of energy absorbable by the object exceeds a predetermined threshold” and “prevent energy from being supplied to the at least one radiating element at the determined frequency.” Appeal Br. 16. More particularly, Appellant argues that “Fagrell teaches supplying energy at the frequency associated with the maximum power absorption, quite the opposite to” preventing energy from being applied at a particular frequency in which the energy absorbable by the object exceeds a predetermined threshold. *Id.*

The Examiner responds that Fagrell discloses a “processing device (i.e., controller) in combination with the power measuring devices [that] determines a value indicative of energy absorbable by the object at a single frequency and then over a range of frequencies.” Ans. 33 (citing Fagrell ¶¶ 131, 140–144, 164). The Examiner further responds that “Fagrell discloses . . . controlling . . . the signal source in response to the power absorbed measured by the power devices” and that “the controller has the ability to control or determine the output frequency of the signal source along with the settings relating to frequency scans.” *Id.* at 34 (citing Fagrell ¶¶ 141, 151, 153, 161–166). The Examiner asserts that “Fagrell teaches . . . monitoring the object’s parameters (i.e. pressure, temperature, amount of

power absorbed in the sample, etc.)”; “that the controller . . . can respond to the monitored parameters if a parameter reaches a predetermined value (i.e. threshold)”; and “that the controller varies the frequency and power of the radiation to the object in respon[se] to a predetermined threshold value.” *Id.* at 35 (citing Fagrell ¶¶ 143, 166, 167). The Examiner also asserts that “Fagrell teaches . . . using a scanning feature to lock and track the frequency that gives the maximum amount of power absorbed by the object.” *Id.* (citing Fagrell ¶ 168).

Although the Examiner explains how the power and/or energy absorbed by an object can be measured and used to control the frequency of a signal generator and how the controller can control and monitor parameters such as temperature, pressure, pH, conductivity, etc. and respond if *these process parameters*, for example, reach a predetermined value (*see, e.g.,* Fagrell ¶¶ 164–166), this is not an adequate explanation of how Fagrell discloses preventing energy from being supplied at a frequency at which *the value indicative of energy absorbable by the object exceeds a predetermined threshold*, as claimed. Moreover, although the Examiner explains that “[t]racking and locking to the frequency that gives maximum power absorbed in the sample 1, (moving maxima) is another available feature” (*see id.* ¶ 168), this is not an adequate explanation of how Fagrell discloses preventing energy from being supplied at a frequency at which the value indicative of energy absorbable by the object exceeds a predetermined threshold, as claimed. In other words, tracking and locking to the frequency that gives maximum power absorption only explains how energy is prevented from being supplied at frequencies in which power absorption is lower.

For the foregoing reasons, we do not sustain the rejection of claim 43 under 35 U.S.C. § 102(b) as anticipated by Fagrell.

Rejection IV

*Independent Claims 1, 32, 34, and 37–39 and
Dependent Claims 2, 4, 6, 8, 12–16, 19, 20, 22–30, 33, 35, and 36*

The Examiner finds that Fagrell teaches many of the limitations of the independent claims, but “is silent regarding the processing unit caus[ing] the amount of energy supplied to the at least one radiating element [to vary] inversely with respect to the value indicative of energy absorbable by the object” or “such that a plot of the amount of input energy supplied vs. frequency and a plot of the value indicative of energy absorbable by the object vs. frequency mirror one another.” Final Act. 9–11 (independent claims 1, 38, and 39); *id.* at 20–22 (independent claims 32 and 34); *id.* at 24–27 (claim 37).

The Examiner finds that “Lentz teaches of the processing unit 52 caus[ing] the amount of energy (high power mode and low power mode) supplied to the at least one radiating element 14 [to vary] inversely with respect to the value indicative of energy absorbable by the object.” *Id.* at 11, 22, 27 (citing Lentz 1:42–68; 2:3–13; 2:60–3:14; Figs. 1–6). The Examiner concludes that it would have been obvious to one of ordinary skill in the art to “modify[] the processing device ability to supply energy based on reflection power and absorption power feedback of the object of Fagrell in view of the applying of electromagnetic radiation by the processing device inversely of the reflection power coefficient of Lentz because Lentz effectively speeds up the defrost operation by incorporating the initial high-

power mode followed by a low-power mode operative until the food item is completely thawed.” *Id.* at 12, 23, 28.

Appellant asserts that all of the claim limitations of the independent claims are “directed to an ‘inverse relationship’ between . . . ‘the amount of energy supplied to the at least one radiating element . . . across the two or more radio frequencies’ and ‘the value indicative of energy absorbable by the object at the respective ones of the two or more radio frequencies.’” Appeal Br. 19. Appellant then argues that “[n]either Fagrell nor Lentz, taken alone or in combination, teaches or suggests this relationship between the amount of energy applied across a range of frequencies and the energy absorbable by the object across the range of frequencies.” *Id.* (emphasis omitted).

In particular, Appellant argues that the Examiner “concedes [that Fagrell] fails to disclose or suggest the ‘inverse relationship’ required by the . . . independent claims” and “Lentz does not cure the deficiencies of Fagrell.” *Id.* (emphasis omitted). According to Appellant, “[t]he Examiner appears to characterize the switch between high-power mode and low-power mode based on a change in the average reflection coefficient disclosed by Lentz as the claimed ‘inverse relationship.’” *Id.* (emphasis omitted) (citing Final Act. 12). Appellant argues that “the claimed ‘inverse relationship’ is with respect to frequencies, while Lentz computes an ‘average value of the reflection coefficient’ and switches between the two modes with respect to time.” *Id.* at 20 (emphasis omitted) (citing Lentz 7:67–8:9; Figs. 4–6).

We do not find this argument persuasive. Although Lentz describes calculating the average value of the reflection coefficient over a pre-determined time interval and also that the switched-to low-power operation

will occur for a “pre-selected time” (Lentz 3:7–9, 8:60–63), Lentz discloses that the switch between the high power mode and low power mode is made when the average value of the reflection coefficient is less than a pre-determined value. Lentz 8:6–9, 47–60; Fig. 5. Lentz discloses that the pre-determined value is designed to “indicate [the] beginning of defrost in the food item or the point at which the reflection coefficient undergoes the most dramatic change.” *Id.* at 8:57–60. Thus, Lentz suggests a direct correlation between the reflection coefficient of a food item and power to be applied when defrosting or thawing food items—i.e., a reflection coefficient lower than a pre-determined value would suggest application of lower power to improve defrosting/thawing. Because absorption is the converse of reflection (*id.* at 1:42–45), Lentz suggests an inverse correlation between absorption capability of a food item and power to be applied when defrosting or thawing food items.

Appellant further argues that “Lentz has no teaching of applying energies at different frequencies” and “[t]here is no ‘inverse relationship’ disclosed ‘at the respective ones of the two or more radio frequencies,’ as required by the claims.” Appeal Br. 20 (underlining omitted). We do not find this argument persuasive in that the Examiner is not relying on Lentz for applying energies at different frequencies, but on Fagrell for this feature. *See, e.g.*, Final Act. 8 (“Fagrell teaches providing an apparatus capable of controlling many samples in parallel, with individual[] adjustments of process parameters such as frequency, power, temperature, pressure, etc. (Para. 24)”); *id.* at 10 (“Fagrell discloses at least one processing device 45 that is structurally capable of being used to supply the at least one radiating element 12 two or more radio frequencies among the plurality of frequencies

(Para. 162, 167–168, 202; Figures 1–3)”; Ans. 35 (“Fagrell . . . teaches that the controller varies the frequency and power of the radiation to the object in respon[se] to a predetermined threshold value (Para. 0167)”). Fagrell recognizes that the dielectric properties of “starting and formed materials during the chemical reaction . . . are temperature dependent” and “known to change with the frequency.” Fagrell ¶ 173. The Examiner then turns to Lentz for teaching an inverse correlation between absorption capability of a food item and power to be applied when defrosting or thawing food items. The Examiner then suggests that Lentz’s teachings would have led one of ordinary skill in the art to modify Fagrell, such that when Fagrell controls the frequency of the signal generator, it does so in a way in which the energy supplied at each of the frequencies varies inversely with respect to the value indicative of energy absorbable by the object at each frequency.

Appellant’s representative at the oral hearing advanced a new argument that had not been presented to the Examiner in the Appeal Brief or Reply Brief. In particular, Appellant’s representative argued that the principles of operation of Fagrell and Lentz are “counter” to each other or “at odds with one another” in that Fagrell seeks to determine the maximum coupling where energy absorption is most efficient and deliver energy at those settings, whereas Lentz seeks to reduce the power or energy at a particular frequency when energy absorption is high. Tr. 14:13–20. Appellant’s representative, however, conceded that the briefing did not address the rationale for combining the references “in that way.” *Id.* at 14:24–25.

As the argument was not properly before the Examiner, such that we might have had the benefit of the Examiner’s views on the argument in

reaching our decision in this appeal, we have considered only those arguments presented by Appellant in the briefs. *See* 37 C.F.R. § 41.47(e)(1): “At the oral hearing, appellant may only rely on Evidence that has been previously entered and considered by the primary examiner and present argument that has been relied upon in the brief or reply brief except as permitted by paragraph (e)(2) of this section.” Paragraph (e)(2) of the relevant section provides: “Upon a showing of good cause, appellant and/or the primary examiner may rely on a new argument based upon a recent relevant decision of either the Board or a Federal Court.” Appellant has not alleged that a circumstance of good cause is present here.

With respect to independent claim 34 in particular, Appellant further argues that “Fagrell and Lentz both fail to determine any target energy absorption amount, or calculate any amount of energy the object absorbs.” Appeal Br. 20 (emphasis omitted). The Examiner finds that “Fagrell discloses the signal generator and amplifier can be controlled in response to the power absorbed in the sample.” Final Act. 21 (citing Fagrell ¶ 140). Although Fagrell does not explicitly call out any amount of energy absorption as being a “target energy absorption amount,” Fagrell’s teaching of controlling the signal generator in response to the actual level of signal energy absorbed in the applicator (Fagrell ¶ 98, 140) is itself a teaching of Fagrell having a target energy absorption amount in that there is an amount that is desired, wanted, and/or needed so as to trigger controlling the operation of the signal generator.

For the foregoing reasons, we sustain the rejection of claims 1, 32, 34, and 37–39 under 35 U.S.C. § 103(a) as unpatentable over Fagrell and Lentz. We also sustain the rejection of claims 2, 4, 6, 8, 12–16, 19, 20, 22–30, 33,

35, and 36, which depend therefrom and for which Appellant relies on the same arguments and reasoning we found unpersuasive in connection with the independent claims. Appeal Br. 21–23.

Dependent Claims 10 and 11

Dependent claims 10 and 11 require the processing device be “configured to cause the at least one radiating element to apply RF energy to the object in a predetermined amount.” Appeal Br. 27 (Claims App.). Appellant argues that “neither Fagrell nor Lentz discloses or suggests applying energy ‘in a predetermined amount’ as required by claims 10 and 11.” *Id.* at 21 (emphasis omitted). Similar to the discussion above regarding a “target energy absorption amount,” we find Fagrell’s teaching of controlling the signal generator in response to the actual level of signal energy absorbed in the applicator (Fagrell ¶¶ 98, 140) is itself a teaching of Fagrell having a predetermined amount in that there is an amount established in advance so as to trigger controlling the operation of the signal generator.

Dependent claim 11 further recites that the “processing device is configured to cause the . . . radiating element to apply RF energy . . . to cause a phase change in at least a portion of the object.” Appeal Br. 27 (Claims App.). The Examiner finds that Fagrell discloses that “at least one processing device 45 is capable of causing the at least one radiating element 12, 18 to apply RF energy to the object 1 in a predetermined amount to cause a phase change in at least a portion of the object.” Final Act. 14 (citing Fagrell ¶¶ 179–82, 199, 201–04). Appellant argues that “the references do not disclose or suggest applying energy to ‘cause a phase change in at least a portion of the object,’ as required by claim 11.” Appeal Br. 21. Appellant’s argument does not respond with sufficient particularity

to the Examiner's finding regarding the capability of Fagrell's processing device to apply energy so as to cause a phase change in at least a portion of the object. For the foregoing reasons, we sustain the rejection of dependent claims 10 and 11 under 35 U.S.C. § 103(a) as unpatentable over Fagrell and Lentz.

Dependent Claim 17

Dependent claim 17 recites that the "processing device is further configured to . . . cause the energy to be supplied to the at least one radiating element at the at least one frequency at an energy level less than a maximum incident energy associated with a power amplifier supplying the energy to the at least one radiating element." Appeal Br. 28–29 (Claims App.). The Examiner finds that Fagrell discloses this limitation. Final Act. 17.

Appellant argues that "Fagrell does not disclose preventing energy supply at frequencies that have higher energy absorption capabilities." Appeal Br. 22. Appellant's argument is not persuasive because it is not commensurate with the scope of claim 17, which does not require the prevention of energy at frequencies that have higher energy capabilities. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (noting that it is well established that limitations not appearing in the claims cannot be relied upon for patentability). For the foregoing reason, we sustain the rejection of dependent claim 17 under 35 U.S.C. § 103(a) as unpatentable over Fagrell and Lentz.

Dependent Claims 18 and 21

Dependent claim 18 recites that the "processing device is further configured to . . . prevent energy from being supplied to the at least one radiating element at the at least one frequency [wherein the value indicative of energy absorbable by the object exceeds a predetermined threshold]."

Appeal Br. 29 (Claims App.). Dependent claim 21 similarly recites that the “processing device is further configured to . . . prevent energy from being supplied to the at least one radiating element at the at least one sub band [wherein a quality factor associated with the sub band is above a predetermined threshold].” *Id.* at 30 (Claims App.). Appellant relies on the same arguments made with respect to independent claim 43. Appeal Br. 22–23. For the same reasons described above in connection with the rejection of claim 43, we do not sustain the rejection of claims 18 and 21.

Rejection V

Appellant relies on the same arguments and reasoning we found unpersuasive in connection with independent claim 1 as the basis for seeking reversal of the rejection of claim 31. Appeal Br. 23. Accordingly, we also sustain the rejection of claim 31 under 35 U.S.C. § 103(a) as unpatentable over Fagrell, Lentz, and Hadinger.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–39, 43	112	Indefiniteness		1–39, 43
1, 8, 14, 16–20, 26–30, 32–39, 43	112	Omission of essential structural cooperative relationship of elements		1, 8, 14, 16–20, 26–30, 32–39, 43
43	102(b)	Fagrell		43
1, 2, 4, 6, 8, 10–30, 32–39	103(a)	Fagrell, Lentz	1, 2, 4, 6, 8, 10–17, 19, 20, 22–30, 32–39	18, 21

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
31	103(a)	Fagrell, Lentz, Hadinger	31	
Overall Outcome			1, 2, 4, 6, 8, 10–17, 19, 20, 22–39	3, 5, 7, 9, 18, 21, 43

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-IN-PART