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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CHENGZONG HAN and SAEED BABAEIZADEH

Appeal 2023-002716
Application 15/109,488
Technology Center 3700

Before CHARLES N. GREENHUT, MICHELLE R. OSINSKI, and ANNETTE R. REIMERS, *Administrative Patent Judges*.

GREENHUT, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE[1]

Pursuant to 35 U.S.C. § 134(a), Appellant[2] appeals from the Examiner's decision to reject claims 1–20. *See* Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

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[1] The subject application was previously before the Patent Trial and Appeal Board in Appeal No. 2020-001933. *See* Decision dated Dec. 2, 2020. In that Decision, the adverse decision of the Examiner was AFFIRMED. Following that Decision, Appellant reopened prosecution and further amended the claims.

[2] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Koninklijke Philips N.V. Appeal Br. 3.

We REVERSE and ENTER A NEW GROUND OF REJECTION .

CLAIMED SUBJECT MATTER

The claims are directed to a device and a method for monitoring cardiopulmonary resuscitation of a patient. Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. A patient monitoring device, comprising:
>
> an ECG monitor operable to monitor a corrupted ECG waveform; and
>
> a controller operably connected to the ECG monitor to classify the corrupted ECG waveform as one of a non-shockable asystole rhythm, or a potentially shockable non-asystole rhythm,
>
> wherein the controller is configured to detect a presence or an absence of an asystole rhythm within a segment of the corrupted ECG waveform as indicated by at least one time domain feature and at least one frequency domain feature extracted by the controller from the segment of the corrupted ECG waveform,
>
> wherein the controller is further configured to classify the corrupted ECG waveform as the non-shockable asystole rhythm responsive to a detection by the controller of the presence of the asystole rhythm within the corrupted ECG waveform, and
>
> wherein the controller is further configured to classify the corrupted ECG waveform as the potentially shockable non-asystole rhythm responsive to a detection by the controller of the absence of the asystole rhythm within the corrupted ECG waveform.

REFERENCES

The prior art relied upon by the Examiner are:

Name	**Reference**	**Date**
Weil	US 5,957,856	Sept. 28, 1999
Didon	US 2011/0224746 A1	Sept. 15, 2011

REJECTION

Claims 1–20 are rejected under 35 U.S.C. § 103 as being unpatentable over Didon and Weil. Final Act. 2.

OPINION

Independent claim 1 is directed to a patient monitoring device and independent claim 12 is directed to a patient monitoring device controller. Appeal Br. 34, 37–38 (Claims App.). Independent claim 1 requires a controller that is "operably connected to [an] ECG monitor to classify [a] corrupted ECG waveform as one of a non-shockable asystole rhythm, or a potentially shockable non-asystole rhythm" and "configured to detect a presence or an absence of an asystole rhythm." *Id.* at 34. Independent claim 12 requires an asystole advisor that is "operably connected to [a] feature extractor to classify [a] corrupted ECG waveform as one of a non-shockable asystole rhythm or a potentially shockable non-asystole rhythm" and "configured to detect a presence or an absence of an asystole rhythm." *Id.* at 37. Claim 16 is directed to a *method* comprising "classifying, by [a] controller, [a] corrupted ECG waveform as one of a non-shockable asystole rhythm *or* a potentially shockable non-asystole rhythm." Appeal Br. 39 (Claims App.; emphasis added). Claim 16 further requires classifying, by the controller, the corrupted ECG waveform "as the non-shockable asystole rhythm responsive to a detection by the controller of a presence of the asystole rhythm" and "as the potentially shockable non-asystole rhythm responsive to a detection by the controller of an absence of the asystole rhythm . . ." *Id.*

The Examiner relies on Didon for this subject matter. Final Act. 2–3, 7–8 (citing Didon ¶¶ 15–17); *see also* Ans. 3–5.

Appellant argues that "*Didon* does not describe or teach the first algorithm of *Didon* being capable of differentiating between a non-shockable asystole rhythm and a non-shockable pulseless electrical activity" because Didon's "first algorithm fails to determine a presence of a shockable ventricular fibrillation rhythm or a shockable pulseless ventricular tachycardia rhythm in the corrupted ECG waveform." Appeal Br. 12; *see also id.* at 13 (arguing Didon's second algorithm also fails to determine a presence of a shockable ventricular fibrillation rhythm or a shockable pulseless ventricular tachycardia rhythm in the corrupted ECG waveform).

The Examiner responds that "the features upon which [A]ppellant relies (i.e., differentiating between a non-shockable asystole rhythm and a non-shockable pulseless electrical activity) are not recited in the rejected claim(s)." Ans. 3.

In response, Appellant argues that "an ECG waveform can only be classified as one rhythm among a plurality of different shockable rhythms and a plurality of different non-shockable rhythms" Reply Br. 10. Appellant argues, "an ECG waveform having a non-shockable rhythm can be classified as a non-shockable *asystole* rhythm or a non-shockable *non-asystole* rhythm (e.g., a non-shockable ventricular fibrillation rhythm or a non-shockable pulseless electrical activity rhythm)" because "*not all non-shockable rhythms include an asystole rhythm*." *Id.* (emphases added).

Appellant has the better position. Didon at paragraph 15 discloses detecting a shockable rhythm, not a non-shockable rhythm, or in particular, a non-shockable asystole rhythm. Didon ¶ 15. Didon at paragraph 16 discloses using a defibrillator when the shockable rhythm is detected. Didon ¶ 15. Didon at paragraph 17 discloses that a *healthcare professional* can

categorize a diagnosis based on the ECG rhythm and also discloses examples of shockable rhythms and *examples* of non-shockable rhythms, one of which is asystole. Didon ¶ 17. Even if these paragraphs together suggest Didon's device, when it does not detect a shockable rhythm could reasonably be regarded as detecting a non-shockable rhythm, there is no disclosure of a controller for, or step of, classifying and detecting a non-shockable *asystole* rhythm because, as Appellant argues, "not all non-shockable rhythms include an asystole rhythm." Reply Br. 10. We recognize that Didon does discuss the general knowledge of healthcare workers would include knowing that asystole rhythms are considered non-shockable. However, this disclosure, without more, does not address this difference in Didon's actual device and method with sufficient explanation as to why it would have been obvious to modify Didon's device and method to classify and detect a non-shockable *asystole* rhythm as recited in the claims.

For these reasons, the rejection cannot be sustained on the grounds set forth by the Examiner.

New Ground of Rejection for claims 16–20

In *Kustom Signals, Inc. v. Applied Concepts, Inc.* (264 F.3d 1326 (Fed. Cir. 2001)), a claim at issue was directed to a method of processing Doppler return information in a traffic radar comprising steps that include "searching said components in memory for the component that meets preselected magnitude *or* frequency criteria." *Kustom Signals* at 1330. An apparatus claim employing means-plus-function language recited, "means for searching the components stored in said memory means to identify the component that meets preselected magnitude *or* frequency criteria." *Id.*

There, the court determined that "whatever the meaning of 'or' as a logical operator, it is quite clear from the patent documents that Kustom was not using 'or' as a technical programming operator, but in its ordinary meaning as stating alternatives." *Id.* at 1331. Although the majority and dissent in Kustom disagreed as to whether the claim language *could* be met by using *both* criteria, the majority and dissent agreed the language would be met by a prior art's disclosure of using *either* criterion.

In *Schumer v. Laboratory Computer Systems, Inc.* (308 F.3d 1304 (Fed. Cir. 2002)), the court held that the use of "or" meant that items in sequence were alternatives to each other, in a patent claim directed to a method that is implemented through hardware or software that added additional capabilities to conventional digitizing tablets. *Schumer* at 1311–1313. From the plain meaning of the term "or," the device that performed the claimed method needed to have the ability only to translate one of three attributes of a coordinate system, i.e., point of origin, angle of rotation, and scale. *Id. Schumer* contains some dicta indicating alternative limitations might be subject to a different analysis outside the context of a method claim:

> If this were a product patent, the concept of capability would have relevance. So too it would have relevance if this process patent were tied to a "particular machine or apparatus."[] But here we deal with a method claim which is not tied to a particular device but that "operate[s] to change articles or materials to a 'different state or thing.'" *Gottschalk*, 409 U.S. at 71, 93 S.Ct. 253. Such a claim must be interpreted to cover any process that performs the method steps. Here in claim 1 the method is identified as "receiving a definition of a second coordinate system for the digitizer, which . . . is not congruent with the digitizer's coordinate system because one of the following elements is different . . ." '492 patent, col. 49, ll. 55–61. One of

> those elements is scale. Thus, for example, a method that translates from a device where only the scale is different is within the literal scope of the claim. The method is performed if any of the three features of a coordinate system is translated, and thus, infringement occurs if any one of these translations is performed.

Id. at 1312.

In *In re Theresa* (720 Fed.Appx. 634 (Fed. Cir. 2018)), our reviewing court held, in the context of analyzing an apparatus claim, that a claim that requires "pre-set words *or* pre-set symbols" was obvious in light of the prior art that disclosed the use of pre-determined words even without reference to symbols. *Theresa* at 637 (citing *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001) (*accord Titanium Metals Corp. of Am. v. Banner*, 778 F.2d 775, 782 (Fed. Cir. 1985))). There, the court noted, "[s]o too with dependent claim 5, which includes a limitation that builds on the alternative limitation in claim 1, while preserving the alternative options." *Id.*

Further, in regard to conditional limitations, the Manual of Patent Examining Procedure (M.P.E.P.) § 2111.04(II) (9th ed., Rev. 01.2024, Nov. 2024) states the following:

> The broadest reasonable interpretation of a method (or process) claim having contingent limitations requires only those steps that must be performed and does not include steps that are not required to be performed because the condition(s) precedent are not met. . . . .
>
> The broadest reasonable interpretation of a system (or apparatus or product) claim having structure that performs a function, which only needs to occur if a condition precedent is met, requires structure for performing the function should the condition occur. The system claim interpretation differs from a method claim interpretation because the claimed structure must be present in the system regardless of whether the condition is met and the function is actually performed.

See also Ex parte Schulhauser, Appeal No. 2013-007847, 2016 WL 6277792 (PTAB Apr. 28, 2016) (precedential).

Here, claim 16 is a *method* claim that requires a step of classifying, by a controller, a corrupted ECG waveform as a non-shockable asystole rhythm *or* a step of classifying, by a controller, a corrupted ECG waveform as a potentially *shockable non-asystole* rhythm. Legal precedent and the M.P.E.P. above suggest that there is a distinction between a method claim and a product or apparatus claim concerning alternative and conditional limitations. For example, as indicated above, *Schumer* states:

> If this were a product patent, the concept of *capability* would have relevance. So too it would have relevance if this process patent were tied to a "particular machine or apparatus."[] But here we deal with a method claim which is not tied to a particular device but that "operate[s] to change articles or materials to a 'different state or thing.'"

Schumer at 1312 (emphasis added). Also as indicated above, M.P.E.P. § 2111.04(II) and *Schulhauser* state:

> The broadest reasonable interpretation of a system (or apparatus or product) claim having structure that performs a function, which only needs to occur if a condition precedent is met, requires structure for performing the function should the condition occur. *The system claim interpretation differs from a method claim interpretation because the claimed structure must be present in the system regardless of whether the condition is met and the function is actually performed*.

M.P.E.P. § 2111.04(II). Thus, even though M.P.E.P. § 2111.04(II) and *Schulhauser* relate to a condition precedent, a system or product claim requires the claimed structure to be present regardless of whether the condition is met or the function is actually performed (i.e., requires structure

for performing the function should the condition occur), whereas a method claim does not.

First, the language of method claim 16 does not require that the step of classifying "the corrupted ECG waveform as one of a non-shockable asystole rhythm or a potentially shockable non-asystole rhythm" as being tied to the controller (i.e., "configured to"), but only operates to detect a specified rhythm. Consequently, method claim 16 does not require a particular structure *capable* of carrying out both the recited steps, i.e., handling the situation both when the condition precedent is met and when it is not. Additionally, method claim 16 (see also dependent claim 18) is similar to claim 5 of *Theresa* in which the court noted there as "includ[ing] a limitation that builds on the alternative limitation . . . , while preserving the alternative options." *Theresa* at 637. For these reasons, we differentiate method claim 16 from device claims 1 and 12. However, as we are unaware of any decisive precedent on this point, and have not been fully briefed on the issue, we note that no inference should be drawn by our decision to omit Appellant's device claims from the new ground of rejection. *See* M.P.E.P. § 1213.02.

We now turn to the recitation of "or" in claim 16, in view of *Kustom Signals*, *Schumer*, and *Theresa*. The Specification does not indicate that the Appellant's use of the term "or" in the context of "a non-shockable asystole rhythm or a potentially shockable non-asystole rhythm" is anything but in its ordinary meaning as stating alternatives. Spec., *passim*. In this regard, claim 16 requires either the step of classifying a corrupted ECG waveform as a non-shockable asystole rhythm, or the step of classifying a corrupted

ECG waveform as a potentially shockable non-asystole rhythm, but not both.

Claim 16 also recites

> wherein the controller classifies the corrupted ECG waveform as the non-shockable asystole rhythm responsive to a detection by the controller of a presence of the asystole rhythm within the segment of the corrupted ECG waveform based on the extracted at least one time domain feature and at least one frequency domain feature.

Appeal Br. 39 (Claims App.). This is a limitation that is contingent on the step of classifying, by the controller, the corrupted ECG waveform as a non-shockable asystole rhythm. As indicated above, M.P.E.P. § 2111.04(II) and *Schulhauser* state, "[t]he broadest reasonable interpretation of a method (or process) claim having contingent limitations requires only those steps that must be performed and does not include steps that are not required to be performed because the condition(s) precedent are not met." Consequently, if the step of classifying, by the controller, the corrupted ECG waveform as one of a potentially shockable non-asystole rhythm is selected (rather than as a non-shockable asystole rhythm), the above limitation is not required because it is not a step that "must be performed" and because the condition precedent is not met, as per M.P.E.P. § 2111.04(II) and *Schulhauser*. In this regard, if Didon discloses a step of classifying, by a controller, a corrupted ECG waveform as a *potentially shockable non-asystole* rhythm, Didon does not need to disclose a step of classifying, by a controller, a corrupted ECG waveform as a non-shockable asystole rhythm, wherein the controller classifies the corrupted ECG waveform as the non-shockable asystole rhythm responsive to a detection by the controller of a presence of the asystole rhythm within the segment of the corrupted ECG waveform.

But in connection to the selected step of classifying, by the controller, the corrupted ECG waveform as *a potentially shockable non-asystole rhythm*, claim 16 requires "wherein the controller classifies the corrupted ECG waveform is classified as the potentially shockable non-asystole rhythm responsive to a *detection* by the controller of *an absence of the asystole rhythm* within the segment of the corrupted ECG waveform." Appeal Br. 39 (Claims App.; emphases added).

Didon discloses detecting an absence of an asystole rhythm by virtue of "determining if the patient has as *shockable* rhythm." Didon ¶ 15 (emphasis added). Didon discloses that a shockable rhythm cannot be an asystole because Didon discloses "*asystole* and pulseless electrical activity (PEA) are examples for *non-shockable rhythms*." *Id.* ¶ 17 (emphases added). Accordingly, if Didon detects a shockable rhythm, then Didon must also detect a *shockable non-asystole* rhythm (i.e., detecting an absence of an asystole rhythm).

Appellant's contention that Didon fails "to determine a presence of a shockable ventricular fibrillation rhythm or to determine a presence of a shockable pulseless ventricular tachycardia rhythm" is unpersuasive because Didon discloses that "[o]ne aspect of the present invention is a method for defribillation delivery decision, including the steps of determining if the patient has a *shockable* rhythm" (Didon ¶ 15, emphasis added) and that "Ventricular fibrillation (VF) . . . [is] colloquially referred to as [a] '*shockable* rhythm[]" (*id.* ¶ 17, emphasis added). Reply Br. 14. Didon discusses VF throughout its disclosure (Didon ¶¶ 17, 18, 44, 46, 50, 51, 56) and explicitly discloses detecting VF (*see*, for example, *id.* ¶ 44 (disclosing "[t]he VF detection algorithm 1 works during the whole chest compression

period"); *id.* ¶ 46 (disclosing "[a] retroactive analysis of all data till the actual end of the chest compression by the VF detection algorithm"). Thus, we find that Didon discloses the step of detecting by the controller a shockable non-asystole rhythm via detecting an absence of the asystole rhythm within the segment of the corrupted ECG waveform.

We note that Appellant does not argue that Didon does not disclose detecting a *potentially* shockable non-asystole rhythm and it seems to us that a shockable non-asystole rhythm, which Didon detects, is within the scope of a *potentially* shockable non-asystole rhythm.

Didon can be regarded as disclosing a step of *classifying*, by the controller, the corrupted ECG waveform as a potentially shockable non-asystole rhythm if Didon discloses the step of *detecting* by the controller a potentially shockable non-asystole rhythm because—it seems to us—that to detect a potentially shockable non-asystole rhythm, one would also need to classify it as "shockable."

To the extent that Appellant argues these are two distinct steps in which Didon does not explicitly disclose the classifying step, we determine that it would have been obvious to modify Didon's method to include such a step. Didon discloses that "healthcare professionals further *categori[z]e the diagnosis* based on the ECG rhythm" in which "Ventricular fibrillation (VF) and pulseless ventricular tachycardia (VT) [are] colloquially referred to as 'shockable' rhythms," whereas asystole is a non-shockable rhythm. Didon ¶ 17 (emphasis added). Thus, once the potentially shockable non-asystole rhythm is detected (or the absence of an asystole rhythm is detected), it would have been obvious to categorize the rhythm as a potentially shockable

non-asystole rhythm for a healthcare professional to diagnose or treat the patient.

To the extent that Appellant argues Weil does not disclose detecting a potentially shockable non-asystole rhythm (*see* Appeal Br. 14–21; Reply Br. 22–30), Appellant is improperly attacking the references individually because Weil is relied upon for extracting time domain and frequency domain features (*see* Final Act. 10–11). *See also* Ans. 5–7, 11. "Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references []. [The reference] must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole." *In re Merck & Co.,* 800 F.2d 1091, 1097 (Fed. Cir. 1986).

In the Appeal Brief, Appellant also recites the limitations of claims 16–20 without explaining why the combination of cited art is deficient with respect to these limitations. *See* Appeal Br. 26–28; *see also* Reply Br. 36–38. Appellant's mere reiteration of the recited claim language does not inform us of error in the Examiner's reliance on Didon and Weil. *See* Final Act. 10–12; 37 C.F.R. § 41.37(c)(1)(iv) (statements that merely point out what a claim recites are not considered to present an argument for separate patentability of the claim); *see also In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) (Rule 41.37 requires more than recitation of the claim elements and a naked assertion that the elements are not found in the prior art). *See also* Ans. 17.

We adopt and incorporate by reference the Examiner's findings and reasoning with respect to Didon and Weil and their combination, and have also supplemented the Examiner's findings and reasoning as described

herein. Based on the adopted Examiner's findings and reasoning and the supplemental findings and reasoning described in more detail herein, we enter a new ground of rejection of claims 16–20 under 35 U.S.C. § 103 as unpatentable over Didon and Weil pursuant to 37 C.F.R. § 41.50(b).

CONCLUSION

The Examiner's rejection of claims 1–20 is reversed. We enter a new ground of rejection of claims 16–20.

DECISION SUMMARY

Claims Rejected	**35 U.S.C. §**	**Reference(s)/Basis**	**Affirmed**	**Reversed**	**New Ground**
1–20	103	Didon, Weil		1–20	16–20
Overall Outcome				1–20	16–20

FINALITY OF DECISION

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). Section 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." Section 41.50(b) also provides:

> When the Board enters such a non-final decision, the Appellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:
>
> (1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. The new ground of rejection is binding upon the examiner unless an amendment or new

> Evidence not previously of Record is made which, in the opinion of the examiner, overcomes the new ground of rejection designated in the decision. Should the examiner reject the claims, appellant may again appeal to the Board pursuant to this subpart.
>
> (2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

Further guidance on responding to a new ground of rejection can be found in the Manual of Patent Examining Procedure § 1214.01.

REVERSED; 37 C.F.R. § 41.50(B)