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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* BO MARTINS

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Appeal 2018-006384  
Application 13/812,883  
Technology Center 3600

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Before JOHN C. KERINS, MICHAEL L. WOODS, and  
ERIC C. JESCHKE, *Administrative Patent Judges*.

WOODS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1–13, 15–21, 23, and 24. Appeal Br. 3–7.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> 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 Analogic Corporation. Appeal Br. 2.

<sup>2</sup> A supplemental appeal brief was filed on March 19, 2018, to place the “Summary of Claimed Subject Matter” in compliance with our Rules. Throughout this Decision, our references to “Appeal Br.” will be to the original appeal brief filed on March 1, 2018.

CLAIMED SUBJECT MATTER

The technology “generally relates to motion-compensated processing with particular application to ultrasound imaging.” Spec. 1 (Technical Field). Claims 1 and 13 are independent. Appeal Br. 8–12 (Claims App.). Claim 1, reproduced below and with emphasis added to two limitations central to our analysis, is illustrative of the claimed subject matter:

1. An echo processor for an ultrasound imaging device, the echo processor comprising:
  - a frame processor, including:
    - a frame buffer and scan converter/ sampler configured to sequentially receive one or more sets of frames, each set including a most aged frame of a region of a tissue of interest acquired with a transducer array at a fixed position with a first beam having a first transmission angle, at least one next frame of the region of interest acquired with the transducer array at the fixed position with a second beam having a second transmission angle which is different from the first transmission angle, and a most recent frame of the region of interest acquired with the transducer array at the fixed position with a third beam having the first transmission angle;
    - a frame identifier configured to identify a set of the one or more sets of frames, including the most aged frame, the at least one next frame, and the most recent frame of the identified set;
    - a displacement field determiner configured to determine a displacement field between the most aged frame and the most recent frame in terms of sample or pixel shifts;*
    - a motion compensator configured to motion compensate the at least one next frame with at least the determined displacement field to correct for incorrect alignment;*
    - a combiner configured to spatially compound the most recent frame and the motion compensated at least one next frame to produce a compounded frame.

## REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Jago	US 6,416,477 B1	July 9, 2002
Konofagou	US 2008/0285819 A1	Nov. 20, 2008
Jeong	US 2008/0064956 A1	Mar. 13, 2008

## REJECTIONS

- (1) The Examiner rejects claims 1, 2, 4–10, and 13 as anticipated under 35 U.S.C. § 102(b) by Jago or, in the alternative, as obvious under 35 U.S.C. § 103(a) over Jago. Final Act. 2.
- (2) The Examiner rejects claims 1–13, 14–21, 23, and 24 as unpatentable under 35 U.S.C. § 103(a) over Jago in view of Konofagou and Jeong. Final Act. 5.

## OPINION

### *I. Intended Use Limitations*

As an initial matter, we address the Examiner’s position that the “limitations [of independent claims 1 and 13] are mostly *intended use* of ultrasound image processors well-known in the art, and capable of performing the functions described.” See Final Act. 3 (emphasis added).

We disagree with the Examiner’s position that these limitations are merely statements of intended use.

“It is well settled that the recitation of a new intended use for an old product does not make a claim to that old product patentable.” *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997) (internal citations omitted).

Independent claim 13, however, is a method claim (Appeal Br. 8 (Claims App.)), not a product claim, and *Schreiber's* holding as to intended use of old products does not apply to claim 13.

As to independent claim 1, this claim recites a processor comprising a “frame buffer and scan converter/sampler,” a “frame identifier,” a “displacement field determiner,” a “motion compensator,” and a “combiner” each “*configured to*” perform certain functions. *See id.* We interpret these limitations to mean that the processor is programmed to perform the functions stated in the claim. *Typhoon Touch Techs., Inc. v. Dell, Inc.*, 659 F.3d 1376, 1380–81 (Fed. Cir. 2011) (discussing *Fantasy Sports Props., Inc. v. Sportsline.com, Inc.*, 287 F.3d 1108, 1117–18 (Fed. Cir. 2002)). A computer programmed to perform particular functions is regarded as structurally different from a computer without that program. *In re Noll*, 545 F.2d 141, 148 (CCPA 1976). Thus, claim 1’s recitation of a processor configured to perform certain functions is not merely a statement of intended use, but connotes structure. Accordingly, the Examiner erred in construing these limitations as mere intended use.

## *II. Anticipated and/or Obvious over Jago*

The Examiner rejected claims 1, 2, 4–10, and 13 “as anticipated by or, in the alternative, . . . as obvious over Jago.” Final Act. 2.

### *a. Examiner’s Rejection*

In rejecting the claims, the Examiner finds that Jago discloses the claimed echo processor comprising a “frame processor,” a “frame identifier,” a “displacement field determiner,” a “motion compensator,” and

a “combiner.” Final Act. 2–3 (citations omitted). The Examiner cites to Jago’s Figure 2 (Ans. 13), a copy of which we reproduce, below:

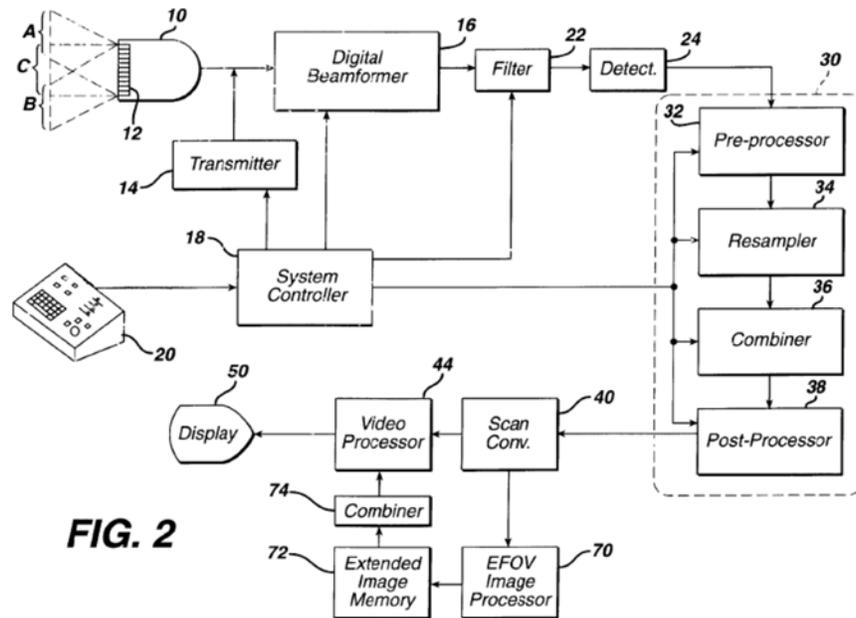


Figure 2 illustrates an ultrasonic diagnostic imaging system. Jago, 2:40–42. In particular, Figure 2 depicts scanhead 10 with array transducer 12 that transmits beams (shown in dashed lines) over an image field. *Id.* at 4:5–10. The echoes returned from the scanlines are received by the elements of the array, digitized by analog-to-digital conversion, and coupled to digital beamformer 16. *Id.* at 4:17–20. Digital beamformer 16 sums the echoes from the array elements to form a sequence of focused, coherent, digital echo samples along each scanline. *Id.* at 4:20–23. Transmitter 14 and beamformer 16 are operated under control of controller 18, which responds to the user via settings on user interface 20. *Id.* at 4:23–26.

The Examiner finds that “Figure 2 of Jago explicitly shows the elements of the combiner (36, 74), scan converter (40), resampler (34), various processors (32, 38, 44 and 70) — which perform the identifying, displacement and motion compensation functions.” Ans. 13.

*b. Analysis*

Appellant contends that Jago does not disclose the claimed displacement field determiner. Appeal Br. 5.

We agree.

Having established that the “configured to” limitations connote structure, we address whether the Examiner has adequately established that Jago discloses the limitations of the properly construed claims.

In addressing the claimed “displacement field determiner configured to determine the displacement field between the most aged frame and the most recent frame,” the Examiner cites to Jago’s column 5, lines 10–30, and column 6, lines 10–40. Final Act. 3.

Upon reviewing the passages, we agree with Appellant’s position that the disclosure in column 5 “is about storing and displaying compounding images,” and that the disclosure in column 6 is about “comput[ing] displacement between overlapping regions of neighboring compounding images.” Appeal Br. 5. We do not find this as disclosing “a displacement field determiner configured to determine a displacement field between the *most aged frame and the most recent frame.*” *Id.* at 8 (Claims App., emphasis added). Importantly, the claim requires the displacement field to be determined between a “most aged frame” and a “most recent frame,” which are frames taken at *different times.* *Id.* We find nothing in the passages cited by the Examiner that support a finding that Jago’s “determiner”—whatever that may be—determines a displacement field with frames taken *at different times.*

Finally, although the Examiner rejects the claims as anticipated and obvious over Jago, the rejection does not set forth what limitation, if any, would have been obvious over Jago. *See* Final Act. 2–4.

For the foregoing reasons, we do not sustain the rejection of claims 1, 2, 4–10, and 13 as anticipated or obvious over Jago.

### *III. Obvious over Jago, Konofagou, and Jeong*

The Examiner rejects claims 1–13, 15–21, 23, and 24 as unpatentable under 35 U.S.C. § 103(a) over Jago, Konofagou, and Jeong. Final Act. 5.

#### *a. Examiner’s Rejection*

The Examiner relies on Jago for teaching an echo processor comprising, *inter alia*, “a displacement field determiner (image registration) that determines the displacement field.” Final Act. 5 (citing Jago, 5:10–30, 6:10–40). Unlike the prior rejection, however, the Examiner submits that

*Jago implies, but does not explicitly teach . . . with a second beam having a second transmission angle which is different than the first transmission angle and a most recent frame of the region of interest acquired with the transducer array at the fixed position with a third beam having the first transmission angle or . . . displacement field determiner configured to determine the displacement field between the most aged frame and the most recent frame . . . , a motion compensator . . . to correct for incorrect alignment.*

*Id.* at 5–6 (ellipses from the final office action, italicized emphases added).

The Examiner also submits that Jeong teaches a “displacement field determiner configured to determine the displacement field between the most aged frame and most recent frame . . . , a motion compensator . . . to correct for incorrect alignment.” *Id.* (citing Jeong ¶¶ 26, 27, 38). In further

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combining the cited art with Jeong, the Examiner reasons, “It would have been obvious to modify the system of Jago to determine the displacement field based on similarities and shifts to *decrease artifacts, simplify the set of calculations* to be determined, and to provide a *faster refresh rate* with higher resolution image to the users.” *Id.* (emphases added).

*b. Analysis*

Appellant argues that the combination of Jago, Konofagou, and Jeong does not “disclose or suggest determining a displacement field between the most aged frame and the most recent frame” or “motion compensating . . . with this displacement field.” Appeal Br. 6.

Appellant’s argument is persuasive.

The Examiner relies on Jago and Jeong for each teaching the claimed “displacement field determiner” and “motion compensator,” yet the cited disclosures do not support the Examiner’s position.

As to Jago, the Examiner posits that Jago “implies . . . [a] displacement field determiner configured to determine the displacement field between the most aged frame and the most recent frame” and “a motion compensator . . . to correct for alignment.” Final Act. 5–6 (citing Jago, 5:10–30, 6:10–40). The Examiner relies on the same disclosure relied upon in the prior rejection, namely, Jago’s columns 5 and 6. *Id.*

We are not persuaded that Jago implicitly teaches these limitations.

Rather, we agree with Appellant’s position that the disclosure in column 5 “is about storing and displaying compounding images” and that the disclosure in column 6 is about “comput[ing] displacement between overlapping regions of neighboring compounding images.” Appeal Br. 5. As such, we are not persuaded that Jago implicitly teaches “a displacement

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field determiner configured to determine a displacement field between the *most aged frame and the most recent frame.*” *Id.* at 8 (Claims App., emphasis added). As discussed above, we find nothing in the passages cited by the Examiner that supports a finding that Jago determines a displacement field with frames taken at *different times*.

Turning to Jeong, the Examiner finds that “Jeong teaches displacement field determiner configured to determine the displacement field between the most aged frame and the most recent frame” and “a motion compensator . . . to correct for incorrect alignment.” Final Act. 6 (citing Jeong ¶¶ 26, 27, 38).

Appellant asserts that Jeong does not teach the claimed limitations. Appeal Br. 6. In particular, Appellant asserts that “Jeong is drawn to displaying an elastic/strain image . . . [that] is acquired by performing an acquisition with no external pressure applied by the user.” *Id.* (citing Jeong, Abstr., ¶¶ 22–26, 38).

We agree with Appellant.

Jeong, titled, “Method of Displaying an Elastic Image,” describes transmitting and receiving an ultrasound signal to and from a target of tissue, before and after a stress is applied, to obtain first and second ultrasound data, respectively. Jeong, codes (54), (57); *id.* ¶ 22. Jeong further discloses, “After obtaining a displacement function for the deformed stress, the displacement function may be differentiated to obtain a gradient representing a strain of deformed tissues.” *Id.* ¶ 25.

Paragraphs 26 and 27 of Jeong—which the Examiner specifically cites to (Final Act. 6)—describe improving the accuracy of calculating the displacement of tissue strain (Jeong ¶ 26) and determining the “total displacement . . . by summing the coarse displacement and the fine

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displacement according to the stress applied” (*id.* ¶ 27). Paragraph 38, which the Examiner also cites to (Final Act. 6), discloses, “The first and second ultrasound receive data are compared to calculate first and second displacements.” Jeong ¶ 38.

Although we find that Jeong discloses determining a displacement field with frames taken at different times (that is, before and after a stress is applied to tissue), the displacement described in Jeong relates to *deformed tissue*, and the Examiner has not adequately explained how this disclosure supports the rejection. The claim further requires a motion compensator and that the displacement field is used for motion compensation and correcting alignment. *See* Appeal Br. 8 (“a motion compensator configured to motion compensate the at least one next frame with at least the determined displacement field to correct for incorrect alignment.”). We do not find Jeong as disclosing a motion compensator for correcting alignment, and Jeong’s tissue displacement disclosure is seemingly unrelated to the Examiner’s reason for combining Jeong—to decrease artifacts, simplify calculations, and a provide for a faster refresh rate. Final Act. 6. Absent further explanation in the record, we cannot support the Examiner’s position that the claimed limitations would have been obvious based on Jeong’s paragraphs 26, 27, and 38. *Id.*

For the foregoing reasons, we do not sustain the rejection of claims 1–13, 15–21, 23, and 24 as unpatentable over Jago, Konofagou, and Jeong.

## CONCLUSION

The Examiner’s rejections are reversed.

DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 2, 4-10, 13	102	Jago		1, 2, 4-10, 13
1, 2, 4-10, 13	103	Jago		1, 2, 4-10, 13
1-13, 15-21, 23, 24	103	Jago, Konofagou, Jeong		1-13, 15-21, 23, 24
<b>Overall Outcome</b>				1-13, 15-21, 23, 24