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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/881,155	04/24/2013	Joerg Bredno	2010P00991WOUS	6890
24737	7590	05/07/2018	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS 465 Columbus Avenue Suite 340 Valhalla, NY 10595			GOOD JOHNSON, MOTILEWA	
			ART UNIT	PAPER NUMBER
			2616	
			NOTIFICATION DATE	DELIVERY MODE
			05/07/2018	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOERG BREDNO,
EBERHARD SEBASTIAN HANSIS,
and DAVID SOWARDS-EMMERD

Appeal 2017-009456
Application 13/881,155
Technology Center 2600

Before JEAN R. HOMERE, KARA L. SZPONDOWSKI, and
SHARON FENICK, *Administrative Patent Judges*.

SZPONDOWSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ appeal under 35 U.S.C. § 134(a) from the Examiner's
Final Rejection of claims 1–25. We have jurisdiction under 35 U.S.C.
§ 6(b).

We AFFIRM.

¹ According to Appellants, the real party in interest is Koninklijke Philips
N.V. App. Br. 2.

STATEMENT OF THE CASE

Appellants' invention is directed to identifying and mitigating artifacts in images. Spec. 1. Claim 1, reproduced below, is representative of the claimed subject matter:

1. A method, comprising:

displaying at least one of projection data or reconstructed image data having visually observable artifacts generated by a scanning device, wherein the at least one of the projection data or the reconstructed image data corresponds to an imaging examination of an object or subject;

identifying one or more sample images other than of the object or subject with known artifacts having artifacts similar to the visually observable artifacts in the at least one of the projection data or the reconstructed image data;

in response to identifying the one or more sample images, displaying, concurrently with the at least one of the projection data or the reconstructed image data having visually observable artifacts, the identified one or more sample images other than of the object or subject with known artifacts, and information related to mitigating the visually observable artifacts.

REJECTIONS

Claims 1–25 stand rejected under 35 U.S.C. § 101 as directed to a judicial exception to statutory subject matter.

Claims 1–25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Leach et al. (US 2007/0127809 A1; published June 7, 2007) (“Leach”), Julia F. Barrett & Nicholas Keat, *Artifacts in CT: Recognition and Avoidance*, 24 RadioGraphics, 1679–91

(2004) (“Barrett”), and C. Faloutsos, *Efficient and Effective Querying by Image Content*, 3 J. Intel. Info. Sys., 231–62 (1994) (“Faloutsos”).

Claims 1–25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wood et al. (US 2003/0095697 A1; published May 22, 2003) (“Wood”) and Barrett.²

ANALYSIS

35 U.S.C. § 101 Rejection

Alice Corp. Pty. Ltd. v. CLS Bank International, 134 S. Ct. 2347 (2014) identifies a two-step framework for determining whether claimed subject matter is judicially-excepted from patent eligibility under 35 U.S.C. § 101. In the first step, “[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept.” *Alice*, 134 S. Ct. at 2355. In the second step of the *Alice* analysis, we “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 78, 79 (2012)). In other words, the second step is to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Id.* (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73).

² In the header of the rejection, the Examiner only identifies Wood. However, in the body of the rejection, the Examiner also relies on Barrett. *See* Final Act. 10–15.

The Examiner determines the claims are “directed to displaying images and information about images.” Final Act. 2. The Examiner further determines the claims do not include additional elements that are sufficient to add significantly more to the claim. Final Act. 3. Specifically, the Examiner finds the claims require generic computer components and “[a]n idea of itself such as comparing information regarding sample images other than of the object or subject does not amount to significantly more than a user visually observing and comparing displayed data which can be done using a book or paper displaying images and/or pen.” Final Act. 3–4

Appellants’ arguments are directed to the second step of the *Alice* analysis. App. Br. 6–7. Specifically, Appellants argue “with the data [having been] generated by a scanner, like the CT [(computer tomography)] data of *In re Abele*, [684 F.2d 902 (CCPA 1982),] the claims should be eligible subject matter.” App. Br. 6; *see also* Reply Br. 2.

We are not persuaded. Appellants’ claims recite displaying data, comparing the data to sample images, and then displaying, along with the data, the pertinent sample images along with additional information. *E.g.*, App. Br. 19. By contrast, in *Abele*, the claims are “directed to an improvement in CAT scan imaging technique whereby the body is exposed to less radiation and, through use of a weighting function in the calculations producing the image, the artifacts are eliminated.” *Abele*, 684 F.2d at 904; *see also id.* at 908. In *Abele*, the X-ray attenuation data is available “only when an X-ray beam is produced by a CAT scanner, passed through an object, and detected upon its exit” and “[o]nly after these steps have been completed is the algorithm performed,[] and the *resultant modified data displayed in the required format.*” *Abele*, 684 F.2d at 908 (emphasis added).

The Court found the improvement in Abele “resides in the application of a mathematical formula within the context of a process which encompasses significantly more than the algorithm alone.” *Abele*, 684 F.2d at 909. There is no corresponding algorithm or transformation of data in Appellants’ claims—all Appellants’ claims do is display data.

Appellants further argue, “[a] human mind cannot generate projection data or reconstructed image data. A human mind is not a scanning device.” App. Br. 6.

We note the claims do not recite “generat[ing] projection data or reconstructed image.” Rather, the claims recite only the display of data that has already been generated or reconstructed. Claim 1 is a method claim that does not positively recite any computer components. Appellants describe in the Specification that “the sample images can be provided through a physical picture album, book, binder, or the like, along with textual guidance.” Spec. 5; *see also* Appellants’ claim 5 (“wherein the sample images are displayed in at least one of an interactive graphical viewer or a physical book.”) Therefore, under Appellants’ own disclosure, method claim 1 can be performed by a human being — for example, holding up (displaying) the claimed image, identifying similar sample images from a physical book, and holding up (displaying) the claimed image and the sample images (along with the textual guidance) alongside each other.

Independent claims 14 and 25 merely implement this comparison and display process on a computer. Rather than reciting additional elements that amount to “significantly more” than the abstract idea, the pending claims, at best, add “memory,” “processors,” and “an interactive graphical viewer,” i.e., generic components, which do not satisfy the inventive concept. *See*

Spec. 3 (“[a] computing system 118 such as a workstation, a computer or the like facilitates evaluating the projection and/or image data,” “computing system 118 includes one or more processors 120 and computer readable storage medium 122 (e.g., physical memory),” “storage medium 122 includes application memory 124 . . . and data memory 126”), 4 (“interactive graphical user interface (GUI) or viewer (e.g., via an applet or the like)”). “[T]he mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention. Stating an abstract idea ‘while adding the words “apply it”’ is not enough for patent eligibility.” *Alice*, 134 S. Ct. 2358 (citation omitted).

Accordingly, we are not persuaded the Examiner erred in this rejection. We, therefore, sustain the Examiner’s 35 U.S.C. § 101 rejection of claims 1–25.

35 U.S.C. § 103(a) Rejections

Claims 1, 14, and 25

Issue 1: Did the Examiner err in finding the combination of Leach, Barrett, and Faloutsos teaches or suggests “identifying one or more sample images other than of the object or subject with known artifacts having artifacts similar to the visually observable artifacts in the at least one of the projection data or the reconstructed image data” (“the identifying limitation”) and “in response to identifying the one or more sample images, displaying, concurrently with the at least one of the projection data or the reconstructed image data having visually observable artifacts, the identified one or more sample images other than of the object or subject with known

artifacts,” (“the displaying limitation”) as recited in independent claim 1 and commensurately recited in independent claims 14 and 25?

Appellants argue “Leach does not disclose artifacts in projection data or image other than of the object or subject.” App. Br. 7. Appellants further argue “Barrett does not disclose, suggest, or imply displaying concurrently an image with an observable artifact and a sample image (i.e. other than of the object or subject with known artifact).” App. Br. 7. According to Appellants, “[t]he image in Barrett with the known artifact is of the same object or subject” and Barrett “describes a method that avoids or suppressing artifacts based on a prior comparison of illustrated images of the same object with and without an artifact.” App. Br. 8. Appellants further argue “Faloutsos does not cure the deficiencies of Barrett” and “Faloutsos does not disclose images with observable or known artifacts.” App. Br. 8.

Appellants’ arguments do not persuasively address the Examiner’s findings. The Examiner relies on the combination of Barrett and Faloutsos to teach or suggest the disputed identifying limitation, and on the combination of Leach, Barret, and Faloutsos to teach or suggest the displaying limitation. Final Act. 5–6. Appellants’ arguments address the references individually, rather than as relied upon by the Examiner. Nonobviousness cannot be established by attacking the references individually when the rejection is predicated upon a combination of prior art disclosures. *See In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Leach describes displaying an MRI image in an interactive display in order to enable one to determine if a contrast/intensity change of a chosen point with an image subject volume is a motion artifact. Leach ¶¶ 7, 12; *see*

also Leach Abstract. Barrett describes different types of artifacts, mechanisms by which those artifacts are generated, methods employed by CT equipment manufacturers to suppress artifacts, and techniques of artifact avoidance available to the operator. Barrett p. 1679–80, Figs. 3–9. Barrett depicts numerous examples of sample images with artifacts, including original images as compared with a reformatted or reconstructed image. *E.g.*, Barrett Figs. 3–6, 7–9, 16, 22, 26–29. Faloutsos describes querying on-line image databases using an image’s content as the basis of the queries, for example, “[g]ive me other images that contain a tumor with a texture like this one.” Faloutsos Abstract, p. 237 (“query by example”), Figs. 5–8. We agree with the Examiner’s findings that the combination of Leach, Barrett, and Faloutsos teaches or suggests the disputed limitations. *See* Final Act. 4–6; Ans. 16–18.

Appellants further argue “the method of Barrett relies on detailed technical knowledge of an operator through a method of reading the article and testing, which teaches away from the recited claim limitations.” App. Br. 8. We disagree. As described above, claim 1 may be manually performed by a human being through the use of a physical book. In claims 14 and 25, Appellants merely present the information in an interactive graphical viewer in the same way Barrett presents the information in an article. *See* Ans. 18.

Accordingly, we are not persuaded the Examiner erred, and we, therefore, sustain the Examiner’s 35 U.S.C. § 103(a) rejection of claims 1, 14, and 25, and for the same reasons, claims 2–6, 11, 13, 15–18, and 22–24, which were not separately argued.

The Examiner also issued an alternative 35 U.S.C. § 103(a) rejection over the combination of Wood and Barrett. *See* Final Act. 10–15. Appellants do not present any arguments with respect to the rejection of claims 1, 14, and 25 over Wood and Barrett. Accordingly, we summarily sustain these rejections as to claims 1, 14, and 25, as well as claims 2–6, 11, 13, 15–18, and 22–24.

Claim 7

Issue 2: Did the Examiner err in finding the combination of Leach, Barrett, and Faloutsos or the combination of Wood and Barrett, teaches or suggests “obtaining data from at least one of the projection or reconstructed image data indicative of a characteristic of the at least one of the projection or reconstructed image data; and displaying only a sub-set of the sample images filtered to correspond to the data,” as recited in dependent claim 7?

The Examiner relies on Barrett to teach or suggest the disputed limitations. Final Act. 7–8 (citing Figs. 22, 26–29). The Examiner finds Barrett “display[s] only a subset of the sample image” and

the claim recites obtaining data from at least one of the projection or reconstructed image data indicative of a characteristic, i.e., helical artifacts of the abdomen, and displaying only a subset of the sample images filtered to correspond to the data, figures 26-29, which would therefore display the images of the sample image filtered to correspond to the data, i.e., helical artifacts of the abdomen.

Ans. 19.

Appellants argue Barrett doesn’t teach the disputed limitations for similar reasons as set forth above. App. Br. 9–10. Appellants further argue

“[t]here is no filtering disclosed, suggested or implied” in Barrett. App. Br. 9–10.

We agree with Appellants. In Figures 26–29, Barrett discloses an original CT image, as well as a reformatted CT image, of different parts of the body. *E.g.*, Barrett Fig. 28 (sagittal), Fig. 29 (sinuses). The Examiner has not sufficiently explained how Barrett teaches or suggests “displaying only a sub-set of the sample images filtered to correspond to the data.”

The Examiner alternatively relies on paragraphs 62, 68, and 102–105 of Wood to teach or suggest the disputed limitation. Final Act. 13; Ans. 19. The Examiner finds “Wood discloses a file type or name as a characteristic of the image data, file lung, folder component and folder nodule reviewer” and a “file type display allows the user to filter the files available in a folder.” Ans. 19. The Examiner further finds “paragraphs 0102 and 0105 . . . permit meaningful displays . . . [of] body images of the same image section shown.” *Id.*

Appellants argue in Wood, “[t]he file type of the file name is not data obtained from a projection or reconstructed image data indicative of a characteristic of the image data. The file type or name are not obtained from the image data and are not disclosed, suggested or implied as a characteristic of the image data.” App. Br. 10.

We agree with Appellants. Wood is generally directed to displaying anatomical information generated by tomographic scanning of the body and providing image annotation information, including displaying markers representing different regions of interest. Wood Abstract, ¶ 25. Wood describes that a user can select and load a particular case for viewing by selecting the appropriate file. Wood ¶¶ 67–68, Fig. 6. The files available

may be filtered. Wood ¶ 68. Wood further describes that images in corresponding windows, including images from different people, can be compared simultaneously. Wood ¶¶ 101, 102. We do not see, and the Examiner has not sufficiently explained, how these teachings in Wood teach or suggest “displaying only a sub-set of the sample images filtered to correspond to the data.” Further, although paragraphs 102–105 of Wood describe viewing a section of the image for display, the claim is directed to filtering the sample images, not to filtering the content within an image.

Accordingly, we are persuaded the Examiner erred. We, therefore, do not sustain the Examiner’s 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos, as well as Wood and Barrett, of dependent claim 7. For the same reasons, we do not sustain the Examiner’s 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos, as well as Wood and Barrett of dependent claims 8–10.

Claim 12

Issue 3: Did the Examiner err in finding the combination of Leach, Barrett, and Faloutsos or the combination of Wood and Barrett, teaches or suggests “wherein the information recommends processing the projection data and reconstructing the processed projection data to generate second reconstructed image data,” as recited in claim 12?

The Examiner relies on pages 1688, 1690, and 1691 and Figure 28 of Barrett to teach or suggest the disputed limitation. Final Act. 9; Ans. 21.

Appellants argue “Barrett does not disclose, suggest or imply a recommended processing the projection data. Rather, to the contrary, Barrett

suggests that with today's multi-section scanners, the problem no longer exists." App. Br. 13.

We are not persuaded. Initially, we note the limitation in claim 12 constitutes non-functional descriptive material that may not be relied upon for patentability, in that the function of displaying the information (claim 1) would be performed in the same manner regardless of the type of information presented (claim 12). *See In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004); *Ex parte Nehls*, 88 USPQ2d 1883, 1889 (BPAI 2008).

Regardless, we agree with the Examiner that Barrett teaches or suggests the disputed limitation. Throughout the discussion, Barrett depicts numerous examples of original images as compared with a reformatted or reconstructed image. *E.g.*, Barrett Figs. 17, 27, 28. Barrett describes that some artifacts "can be partially corrected by the scanner software," but "careful patient positioning and the optimum selection of scan parameters are the most important factors in avoiding image artifacts." Barrett p. 1691.

Accordingly, we are not persuaded the Examiner erred. We, therefore, sustain the Examiner's 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos, as well as Wood and Barrett, of dependent claim 12.

Claim 13

Issue 4: Did the Examiner err in finding the combination of Leach, Barrett, and Faloutsos or the combination of Wood and Barrett, teaches or suggests "wherein the information recommends repeating the imaging examination under a different set of operating conditions," as recited in claim 13?

The Examiner relies on pages 1684 and 1687 and Figure 18 of Barrett to teach or suggest the disputed limitation. Final Act. 9; Ans. 22.

Appellants argue “Barrett discloses avoiding artifacts and does not disclose, suggest or imply information recommending repeating an imaging examination.” App. Br. 14.

We are not persuaded. As with claim 12, we note the limitation in claim 13 constitutes non-functional descriptive material that may not be relied upon for patentability, in that the function of displaying the information (claim 1) would be performed in the same manner regardless of the type of information presented (claim 13). *See Ngai*, 367 F.3d at 1339; *Nehls*, 88 USPQ2d at 1889.

Regardless, we agree with the Examiner that Barrett teaches or suggests the disputed limitation. Barrett describes that “it is essential to position the patient so that no parts lie outside the scan field.” Barrett p. 1687; *see also* Barrett p. 1691 (some artifacts “can be partially corrected by the scanner software,” but “careful patient positioning and the optimum selection of scan parameters are the most important factors in avoiding image artifacts). We agree with the Examiner that such disclosure teaches or suggests the disputed limitation.

Accordingly, we are not persuaded the Examiner erred. We, therefore, sustain the Examiner’s 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos, as well as Wood and Barrett, of dependent claim 13.

Claim 19

Issue 5: Did the Examiner err in finding the combination of Leach, Barrett, and Faloutsos or the combination of Wood and Barrett, teaches or

suggests “wherein the information includes audible information,” as recited in claim 19?

The Examiner relies on page 232 of Faloutsos to teach or suggest the disputed limitation. Final Act. 10; Ans. 22–23.

Appellants argue “Faloutsos does not disclose information related to mitigating the known artifacts. The synchronized delivery of data (video and audio), is not reasonably related to mitigating artifacts.” App. Br. 15.

We are not persuaded. Faloutsos states “[w]e believe that . . . [query by image content] technology should be a part of future multimedia databases that will contain text, sound, image and video.” Faloutsos p. 232. Appellants’ arguments against Faloutsos do not address the combination of references as relied upon by the Examiner. For example, the Examiner does not rely on Faloutsos, but rather, Barrett, to teach or suggest information related to mitigating known artifacts. *See* Final Act. 4–6. We agree with the Examiner that Faloutsos’ teaching of multimedia databases, as combined with Barrett, teaches or suggests that the information includes audible information.

With respect to Wood, the Examiner finds “[r]egarding claims 14-25, they are rejected based upon similar rational[e] as above.” Final Act. 15. The Examiner relies on paragraph 76 of Wood, finding “a report button captures the contents of the screen for a report in a variety of output options, it is well known in the art that text, images and audio are well known output options.” Final Act. 14.

Appellants argue “Wood does not disclose, suggest or imply audible information related to mitigating artifacts.” App. Br. 15–16.

We are persuaded by Appellants' arguments. Paragraph 76 of Wood describes a reports button that opens a menu that "allows the user to select one of a variety of output options into which he or she can move the image on the display." *See also* Wood Fig. 8. Although we agree with the Examiner that audio is a well-known output option, we do not see where Wood teaches or suggests audible information. Rather, Wood describes an output option where the user can *move the image on the display*.

Accordingly, we sustain the Examiner's 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos, but do not sustain the Examiner's 35 U.S.C. § 103(a) rejection over Wood and Barrett, of dependent claim 19.

Claim 20

Issue 6: Did the Examiner err in finding the combination of Leach, Barrett, and Faloutsos, or the combination of Wood and Barrett, teaches or suggests "wherein the sample images are evaluated before the imaging examination and used to obtain information relating to avoiding artifacts with the imaging examination," as recited in claim 20?

The Examiner finds "Barrett discloses images before an imaging examination in that the images are displayed in the article and evaluated to identify the artifacts present in each image in the article, in order for the reader to be able to avoid suppress artifacts." Ans. 23.

Appellants argue "Barrett suggests reading the article and taking a test. Barrett does not disclose, suggest, or imply evaluating sample images before an imaging examination." App. Br. 16; *see also* Reply Br. 9.

We are not persuaded. Barrett's objectives are described as "[i]dentify[ing] the various types of artifacts that can appear in CT images,"

“[d]iscuss[ing] the reasons why these artifacts occur,” and “[d]escrib[ing] the methods of avoiding or suppressing artifacts available with modern CT systems.” Barrett p. 1679. Barrett provides numerous examples of sample images with artifacts, including original images as compared with a reformatted or reconstructed image. *E.g.*, Barrett Figs. 3–6, 7–9, 16, 22, 26–29. Moreover, as described above, Appellants’ Specification describes the sample images and associated mitigating information may be provided in a physical book. *See* Spec. 5.

Accordingly, we are not persuaded the Examiner erred. We, therefore, sustain the Examiner’s 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos, as well as the rejection over Wood and Barrett, of dependent claim 20.

Claim 21

Issue 7: Did the Examiner err in finding the combination of Leach, Barrett, and Faloutsos or the combination of Wood and Barrett, teaches or suggests “wherein the information is obtained through at least one of a key word search of the sample images based on anatomy to be scanned or scrolling through a set of sample images corresponding to the anatomy to be scanned,” as recited in claim 21?

The Examiner finds Figures 5–8 of Faloutsos “allows for scrolling through the sample images.” Ans. 23.

Appellants argue “[a] slider bar of images does not disclose, suggest or imply a set of sample images corresponding to an anatomy to be scanned.” Reply Br. 10.

We are not persuaded. Faloutsos teaches querying by image content, which may include medical images (p. 231), and displaying the results, which allows for scrolling through the image results (Figs. 5–8). As described above, Barrett teaches or suggests the claimed information. We agree with the Examiner that Faloutsos, as combined with Barrett, teaches or suggests the disputed limitation.

The Examiner further relies on paragraph 101 and claim 6 of Wood. Ans. 23.

Appellants argue “[t]he disclosed operation of the windows does not include, suggest or imply a set of images corresponding to an anatomy to be scanned.” Reply Br. 10.

We are not persuaded. Wood is a “system for displaying anatomical information . . . , such anatomical information generated by tomographic scanning of the body.” Wood ¶ 25. Wood allows “the images can be scrolled simultaneously via navigation scroll bar.” Wood ¶ 101; *see also* Wood. Fig. 19. Based on this disclosure, we agree with the Examiner that Wood teaches or suggests the disputed limitation.

Accordingly, we are not persuaded the Examiner erred. We, therefore, sustain the Examiner’s 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos, as well as the rejection over Wood and Barrett, of dependent claim 21.

DECISION

The Examiner’s 35 U.S.C. § 101 rejection of claims 1–25 is affirmed.

The Examiner’s 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos of claims 1–6 and 11–25 is affirmed.

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The Examiner's 35 U.S.C. § 103(a) rejection over Leach, Barrett, and Faloutsos of claims 7–10 is reversed.

The Examiner's 35 U.S.C. § 103(a) rejection over Wood and Barrett of claims 1–6, 11–18, and 20–25 is affirmed.

The Examiner's 35 U.S.C. § 103(a) rejection over Wood and Barrett of claims 7–10, and 19 is reversed.

Because we affirm at least one ground of rejection with respect to each claim on appeal, we affirm the Examiner's decision to reject all of the pending claims.

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

AFFIRMED