

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RF CONTROLS, LLC,
Petitioner,

v.

A-1 PACKAGING SOLUTIONS, INC.,
Patent Owner.

Case IPR2014-01536¹
Patent 8,690,057 B2

Before HOWARD B. BLANKENSHIP, BRYAN F. MOORE, and
GREGG I. ANDERSON, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

¹ IPR2015-00119 has been consolidated with this case. All citations are to the IPR2014-01536 consolidated record unless otherwise indicated.

I. INTRODUCTION

RF Controls, LLC (“Petitioner”) filed a Petition (Paper 4, Corrected Petition (“Pet.”)) to institute an *inter partes* review of claims 1–16 (the “challenged claims”) of U.S. Patent No. 8,690,057 B2 (Ex. 1001, “the ’057 patent”). See 35 U.S.C. §§ 311–319. A-1 Packaging Solutions, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim. Resp.”). RF Controls, LLC (“Petitioner”) also filed a second Petition (IPR2015-00119, Paper 1, Petition (“Second Pet.”)) to institute an *inter partes* review of claims 17–30 (the “challenged claims”) of the ’057 patent.” A-1 Packaging Solutions, Inc. (“Patent Owner”) filed a Preliminary Response to the Second Petition (IPR2015-00119, Paper 6 (“Second Prelim. Resp.”)). We determined Petitioner had established a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims in each Petition. We instituted an *inter partes* review as to claims 1, 17, and 27. Paper 10 (“Dec. on Inst.”); Paper 15 (“Second Dec. on Inst.”). We declined to institute an *inter partes* review as to claims 2–16, 18–26, and 28–30. *Id.* We also exercised our authority under 35 U.S.C. § 315(d) to consolidate the IPR2015-00119 proceeding and the proceeding in IPR2014-01536 as one trial. Second Dec. on Inst. 21.

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 16 (“PO Resp.”)) and Petitioner filed a Reply (Paper 17 (“Pet. Reply”)). The parties did not ultimately request an oral hearing. Papers 17, 19.

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons that follow, we determine that Petitioner has shown by

a preponderance of the evidence that claims 1, 17, and 27 of the '057 patent are unpatentable.

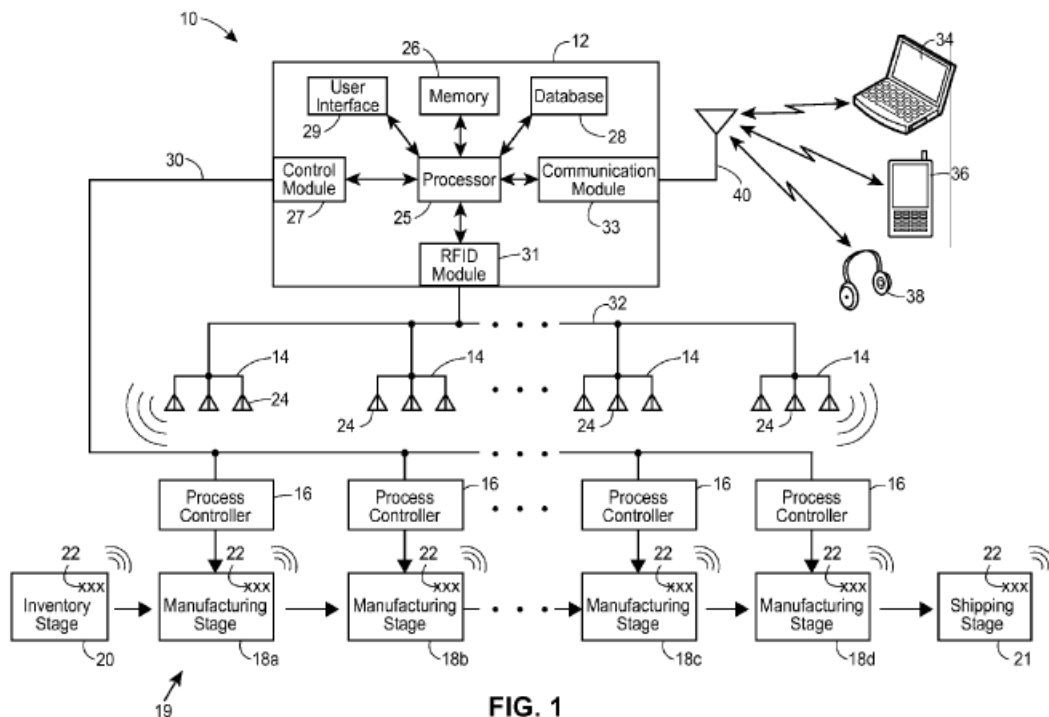
II. BACKGROUND

A. Related Matters

The parties have not identified any related proceedings.

B. The '057 Patent (Ex. 1001)

The '057 patent relates to a process management system that uses a radio frequency identification (RFID) detection system in the form of, for example, a phased array antenna based RFID detection system to track and manage material storage and flow in a manufacturing process or plant. Ex. 1001, Abstract. A block diagram of an exemplary process management system is shown in Figure 1 of the '057 patent, reproduced below.



As illustrated in Figure 1, above:

[I]nventory and process management or tracking system 10 include[s] a command system 12 connected to an RFID detection and tracking system that includes a network of antenna systems 14 (which may be for example, one or more electronically steerable phased array antenna systems each having multiple antenna elements 24) connected to a processor (not shown) that directs or operates the antennas or elements 24 . . . and performs RFID detection and tracking.

Id. at 13:66–14:7. “During operation, material inputs and material outputs at each stage or region of the manufacturing process 19 are tagged with RFID tags 22 for identification and tracking.” *Id.* at 14:25–28. “The antenna systems 14 . . . are used to detect and track the location and movement of the RFID tagged material inputs and material outputs and use this tracking information to manage the manufacturing process 19 using, for example, the controllers 16.” *Id.* at 14:28–36.

C. Illustrative Claim

Of the challenged claims, claim 1 is independent. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. An inventory tracking system for use in tracking placement of physical items within an inventory tracking region, comprising:
 - a radio frequency tag detection system including:
 - a plurality of radio frequency antennas disposed in a spaced apart manner within the inventory tracking region; and
 - a detection controller coupled to the plurality of radio frequency antennas, the detection controller including a beam-steering control system that controls the operation of each of the radio

frequency antennas, wherein one of the plurality of radio frequency antennas uses a beam to scan a portion of the inventory tracking region to detect a current physical location of one or more radio frequency tags disposed in a scanned portion of the inventory tracking region, wherein the current physical location corresponds to a position defined by two coordinate units in a multidimensional coordinate system and the value of each of the two coordinate units is determined by the one of the plurality of radio frequency antennas, and wherein the detection controller generates indications of the one or more detected radio frequency tags and the current physical locations of the one or more detected radio frequency tags in the scanned portion within the inventory tracking region; and

a tracking system coupled to the radio frequency tag detection system to receive the indications of the one or more detected radio frequency tags and the current physical locations of the one or more detected radio frequency tags in the scanned portion within the inventory tracking region, the tracking system including:

a memory for storing inventory item information for each of a plurality of inventory items, the inventory item information for each of the plurality of inventory items including an inventory item radio frequency tag identifier, inventory item identification information defining the identity of the inventory item, and an indication of the current physical location of the inventory item within the inventory tracking region; and

an access system that accesses the memory and provides at least a subset of the inventory item information for one or more of the inventory items to a user for determining the current physical location of the one or more of the inventory items within the inventory tracking region,

wherein the tracking system updates the indication of the current physical location of at least one particular inventory item within the inventory tracking region as stored in the memory for the at least one particular inventory item based on the indication of the current physical location of the one or more detected radio frequency tags for at the least one particular inventory item as produced by the detection controller.

D. Evidence Relied Upon

Petitioner's patentability challenge is based on the following references, either directly or as allegedly incorporated by reference:

Reference	Patent/Printed Publication	Exhibit
Hofer	US 8,493,182 B2	1007
Bloy	WO 2009/035723 A1	1008

E. Asserted Ground of Unpatentability

Petitioner challenges the patentability of the '057 patent claims based on the following ground:

Reference	Basis	Claims Challenged
Hofer	§ 102	1, 17, and 27

III. CLAIM CONSTRUCTION

Claims of an unexpired patent are interpreted using the broadest reasonable construction in light of the specification of the patent. *See* 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs.*, 793 F.3d 1268, 1275 (Fed. Cir. 2015), *cert. granted sub nom. Cuozzo Speed Techs., LLC v.*

Lee, 136 S. Ct. 890 (mem.) (2016). Petitioner and Patent Owner offer respective constructions for several claim terms. *See* Pet. 5–13; Prelim. Resp. 6–11. For purposes of this decision, we determine the only claim language requiring some degree of express construction is the phrase encompassing the term “antenna,” recited in independent claim 1.

In the Decision to Institute, we did not find that a specific definition of antenna was necessary. Dec. on Inst. 7–10. However, we clarified that one of ordinary skill in the art would understand that “one of the plurality of radio frequency antennas” may refer to a single antenna such as a phase array antenna. *Id.* at 9–10. The parties have not presented any further argument or evidence on this point. We adopt this determination and the analysis at pages 7–10 of the Decision to Institute into this Final Decision.

IV. ANALYSIS

A. *Anticipation of Claim 1 by Hofer*

1. *Hofer (Ex. 1007)*

Hofer discloses that each steerable phased array antenna module comprises an “RFID reader module 16[, which] directs an interrogation signal to and receives corresponding signals from the steerable phased array antenna 18” as well as a “beam steering unit 12 under the control of a location processor 14.” Ex. 1007, 2:46–50, 2:50–57. Hofer further discloses that “[a]n output 36 of the location processor comprises the tag identifier, time stamp and three dimensional location of the associated RFID tag.” Ex. 1007, 3:15–17. “Hofer generally describes that the steerable phased array antenna system scans a volume, detects RFID tags, and gathers data sets associated with each detected RFID which are processed by a location

processor to derive the three-dimensional position of each detected RFID tag.” Pet. 25–26 (emphasis deleted) (citing Ex. 1007, 3:8–12, 30–33, 44–49, 56–58). “Hofer further discloses that the data sets include the values of the two angular dimensions of a polar coordinate system (phi and theta), which are provided by the beam steering unit, and the value of the third coordinate (distance or range of the tag from the antenna) is derived from other data in the data set using a phase ranging algorithm.” *Id.* at 26 (emphases deleted) (citing Ex. 1007, 3:8–17, 30–33, 4:1–5:44). Hofer further discloses that “[a]n output 36 of the location processor comprises the tag identifier, time stamp and three dimensional location of the associated RPID tag.” *Id.* (citing Ex. 1007, 3:15–17).

Hofer purports to incorporate by reference the tracking system described in Bloy (Ex. 1008). Ex. 1007, 1:11–29. “To incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents.” *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282–83 (Fed. Cir. 2000). Whether a patent describes material to be incorporated by reference with sufficient particularity is assessed from the perspective of a person of ordinary skill in the art. *Id.* at 1283. Hofer recites:

Commonly owned PCT Patent Application Publication WO 2009/035723, titled “Radio Frequency Signal Acquisition and Source Location System” by Bloy et al published Mar. 19, 2009, hereby incorporated by reference in its entirety, discloses a real-time RFID location system that utilizes an Intelligent Tracking and Control System (ITCS) coupled to one or more intelligent scanning antenna Signal Acquisition and Source Location (SASL) modules (an ITCS installation) to enable the

accurate 3-dimensional location of RFID tags arbitrarily placed and/or moving through a defined target area (volume). Touch free Identification, location and/or tracking systems such as the ITCS object identification systems disclosed in WO 2009/035723 enable the identification and location of tags and/or tagged items, attributing significance to the appearance, disappearance, location or co-location of tags or tagged items and thereby facilitating better business process decisions.

Ex. 1007, 1:11–29. Thus, Hofer discloses aspects of Bloy relied on by Petitioner are specifically incorporated. Given this text from Hofer, we find the citations to Bloy relied on by Petitioner are properly incorporated by reference.

2. Analysis

Petitioner provides citations, as detailed above, to Hofer that correspond to the radio frequency antennas and detection controller recited in claim 1. Pet. 25–26.

Patent Owner argued in its Preliminary Response that “[n]either Hofer nor Bloy is directed towards inventory management using RFID tags, or even inventory management of any kind, but instead deal with general methods of locating RFID tags.” Prelim. Resp. 21. To anticipate, a prior art reference need not come from the same field or have the same intended function as the patent-in-suit. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). In *Schreiber*, the Federal Circuit held that prior art disclosing a container with a conical top for dispensing liquids anticipated a patent for a container with a conical top for dispensing popcorn. *Id.* The court observed that “[i]t 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.” *Id.* We stated in our Decision to Institute, with respect to inventory tracking, the

body of the claim refers only to an “inventory tracking region” (an area where tag detection occurs) and an “inventory item” with associated “inventory item information” (data to be stored and displayed).

Additionally, Bloy does state that the invention provides tracking that may be useful to identify movement related to inventory control. Ex. 1008, 21–22.² Thus, in deciding to institute, we determined that Hofer (with Bloy) is directed at least in part to inventory management.

i. Intended Use

Patent Owner now argues that “[e]ven assuming that the ‘inventory tracking’ limitations recite an intended use, these limitations are closely tied to structure in the claims, entitling them to patentable weight.” PO Resp. 5.

Patent Owner further argues:

the “inventory tracking” limitations describe aspects of tracking that are particular to inventory (as opposed to tracking other things) and, importantly, those limitations are intertwined with multiple structural components of the claims, and the functions of those structural components—such as “memory” (which stores inventory tracking information), the “access system” (which accesses the inventory tracking information), and the “tracking system” (which updates the inventory information in memory). These functions, collectively, describe part of what makes an inventory tracking system different: that it tracks not only the location of an RFID tag, but the identity/quantity/etc. of the items the RFID tag represents.

Id. at 6.

² The Petition cites to the internal page numbers of Bloy rather than the page numbers added to Ex. 1008. To avoid confusion, we cite to the internal page numbers of Bloy in this Final Decision.

The relevant claim language is “inventory tracking region” or “inventory region.” Claim 1 recites in the preamble “[a]n inventory tracking system for use in tracking placement of physical items within an inventory tracking region” and claims 17 and 27 recite in the preamble “[a] method of tracking inventory within an inventory region.” “Whether to treat a preamble as a limitation is a determination ‘resolved only on review of the entire[] . . . patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.’” *Catalina Mktg. Int’l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Corning Glass Works v. Sumitomo Electric U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989)). A preamble is not limiting where a structurally complete invention is defined in the claim body and the preamble only states a purpose or intended use for the invention. *Id.* The preambles of claims 1, 17, and 27 recite where the apparatus and system are to be used. Also, the bodies of claims 1, 17, and 27 define a structurally complete apparatus or system.

One guidepost for determining the effect of a preamble on claim scope is whether the preamble language provides antecedent basis for any limitation in the body of the claim. *Id.* The bodies of claims 1, 17, and 27 specify that the “inventory tracking region” or “inventory region” is the place in which the RFID tag is detected and tracked. But, other than that, the claims do not rely on the preamble for structure. Thus, we find that the “inventory tracking region” of claim 1 and “inventory region” of claims 17 and 27, in the preamble and the body of those claims, are an intended use in those claims and give them no patentable weight. *See Schreiber*, 128 F.3d at 1477.

Patent Owner argues that, in another matter:

the Board gave patentable weight to a claim limitation directed to a control system, “operable to modify the drive signal and thereby maintain oscillation of the flowtube,” holding that the phrase “thereby maintain oscillation of the flowtube” required that the control system have the appropriate structure to modify the drive signal and achieve the claimed function.

PO Resp. 6 (citing *Micro Motion Inc. v. Schneider Electric SA*, IPR2014-00392, (Dec. on Inst.) Paper 13, 12 (PTAB Aug. 4, 2014)). Thus, according to Patent Owner, “[j]ust as a control system requires an appropriate structure to maintain oscillation in a flowtube, the memory, access system, and detection controller have an associated physical structure to facilitate updating of inventory item information.” *Id.* at 7. In this case, however, the claim calls out the structure required to track the item inventory information in the inventory tracking region, e.g. the antennas arranged as claimed and RFID tags associated with inventory items.

Patent Owner argues further that:

These inventory tracking features are not merely an intended use of an RFID tracking system, but are functional limitations describing interoperability between the memory, access system, and tracking system structures. These limitations, in other words, describe how an RFID inventory tracking system works differently from non-inventory RFID tracking systems.

PO Resp. 8–9. We disagree. For example, claim 1 describes storing and accessing data that is displayed to a user. Nothing in the claim points out any aspect of the manipulation of this data that is unique to “inventory” data versus any other data that would be stored and accessed. As to the tracking aspect of the claim, the claim explicitly states that it is the RFID tag that is tracked, not the inventory item. Nothing in the Specification suggests that

tracking an RFID tag attached to an inventory item as embodied in the invention is different in any material way to tracking any other kind of item with an RFID tag attached.

ii. *Non-Functional Descriptive Material*

We also determine that the recitation of “item inventory information” is non-functional descriptive material to the extent that it means anything other than the identity of an item. That is, we find that while the claim requires information about an item associated with an RFID tag, there is no use of the information in the claim that requires the information be inventory related. Patent Owner states that “[t]he inventory tracking system of claims 1, 17, and 27, on the other hand, not only tracks the location of the items, but also manages information about the inventory, like what it is, or how long it has been on the shelf.” PO Resp. 5. However, independent claims 1, 17, and 27 do not specify that the information must include what the inventory item is, or how long it has been on the shelf.

Below, we will discuss each of the limitations reciting “item inventory information.” Claim 1 recites “a memory for storing . . . inventory item information defining the identity of the inventory item.” Claim 1 further recites “an access system that accesses the memory and provides at least a subset of the inventory item information for one or more of the inventory items to a user.” Thus, Claim 1 does not recite performing any new function or action based upon the fact that the item is an inventory item to achieve a desired result. As such, the limitation of claim 1 to “item inventory information” is directed to non-functional descriptive material, which is not entitled to weight in the patentability analysis. *See Ex parte Curry*, 84 USPQ2d 1272, 1274 (BPAI 2005) (informative) (“wellness-related” data in

databases and communicated on distributed network did not functionally change either the data storage system or the communication system used in the claimed method), *aff'd*, No. 06-1003 (Fed. Cir. June 12, 2006).

“[N]onfunctional descriptive material cannot lend patentability to an invention that would have otherwise been [invalidated] by the prior art.” *Ex parte Mathias*, 84 USPQ2d 1276, 1279 (BPAI 2005) (informative) (citing *In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004)), *aff'd*, 191 Fed. Appx. 959 (Fed. Cir. 2006); see *Ex parte Nehls*, 88 USPQ2d 1883, 1887–90 (BPAI 2008) (precedential).

The first step in determining whether a claim limitation is non-functional descriptive material (i.e. printed matter) is finding that the “printed matter [is] matter claimed for what it communicates.” *In re Distefano*, 808 F.3d 845, 850 (Fed. Cir. 2015). Here, the inventory item information is claimed for its communication of information about the item of inventory.

The next step is determining “if the claimed informational content has a functional or structural relation to the substrate.” *Id.* Here, the inventory aspect of the item inventory information is not related to claimed computerized tracking system. See generally MPEP § 2111.05, 9th ed., Rev. 7, Nov. 2012 (“[W]here the claim as a whole is directed [to] conveying a message or meaning to a human reader independent of the intended computer system, and/or the computer-readable medium merely serves as a support for information or data, no functional relationship exists.”).

Finally, claim 1 recites “the tracking system updates the indication of the current physical location of at least one particular inventory item . . . based on the indication of the current physical location of the one or more

detected radio frequency tags for at the least one particular inventory item as produced by the detection controller.” For this limitation, it is the RFID tag that has a functional relationship to the limitations of the claim, i.e. the location of the inventory item is commensurate with the location of the RFID tag such that it is the RFID tag’s location which is detected and updated in claim 1. Thus, the inventory item itself and the fact that it is inventory as opposed to any other item does not have a functional relationship to the tracking system or any other part of claim 1.

Claims 17 and 27 contain substantially similar limitations as discussed above. Thus, for the reasons stated above, the limitation of claims 17 and 27 to “item inventory information” is directed to non-functional descriptive material to the extent that it means anything other than the identity of an item, which is not entitled to weight in the patentability analysis.

Patent Owner cites to *In re Lowry* for the proposition that “[m]ore than mere abstraction ... the data structures provide tangible benefits: data stored in accordance with the claimed data structures are more easily accessed, stored, and erased...The Board is not at liberty to ignore such limitations.” PO Resp. 8–9 (citing *In re Lowry*, 32 F.3d 1579, 1583–84 (Fed. Cir. 1994)). In *Lowry*, the Federal Circuit pointed out that “the [claimed] data structures [are not] analogous to printed matter. Lowry’s ADOs do not represent merely underlying data in a database. ADOs contain both information used by application programs and information regarding their physical interrelationships within a memory.” 32 F.3d at 1583. Thus, the nature of relationship between the data structures and the memory in *Lowry* created a functional relationship between the data structure and the computer. See *id.* Here the inventory item information is data of not

specific structure that is manipulated by generic computer functions of storing and displaying to a user.

Patent Owner analogizes this case to *Fujian Newland Computer Co., Ltd. v. Hand Held Products, Inc.*, IPR2013-00595, which involved a bar code. PO Resp. 10 (citing *Fuijan*, IPR2013-00595, Paper 14, 21 (PTAB Feb. 28, 2014)). Patent Owner suggests by this analogy that item inventory information is functional in the way a bar code is functional. Petitioner responds that “a bar code recognition module must have a specific structure, such as circuitry or program logic to recognize and distinguish bar code symbols from other descriptive material in image data.” Pet. Reply 10. We agree with Petitioner. Bar codes are more like the data structures of *Lowry*. In fact, bar codes are also more analogous to the RFID tag in this case, which must have a particular structure in order to be read by the claimed antenna. Thus, we do not find that *Fuijan* supports Patent Owner’s position with respect to the functionality of the “item inventory information” of claim 1.

Patent Owner further argues that:

if [item inventory information] is ignored as merely descriptive, other limitations in the claim become confused and unworkable. For example, the “access system” limitation must “access[] the memory” and provide “a subset of the [item inventory information].” If “inventory item information” is not limiting, then what subset is the access system providing?

PO Resp. 10–11. Patent Owner misses the point. Because item inventory information is non-limiting, any subset of item inventory information is also non-limiting. Additionally, the claim recites “at least” a subset, thus more than a subset satisfies the claim limitation. Patent Owner’s question

assumes that all elements of the claim must be found to be limiting. That is not the case.

Patent Owner further argues that:

“the identity of the inventory item”—has nothing to do with the RFID tag. Rather, the “identity of the inventory item” is an important limitation that defines the invention of inventory tracking over other kinds of RFID tracking. In an inventory tracking system, it is not enough to simply know the physical location of the RFID tag. The system must also know the identity of the goods the RFID tag represents.

PO Resp. 10. We disagree. While the identity of the item associated with the RFID tag is necessary to know what specific item is being tracked, there is no structural significance to the fact that the item is inventory versus any other kind of item. As noted above, we find that the inventory aspect of item inventory information has no patentable weight.

We find that the inventory aspect of “inventory item identification information defining the identity of the inventory item, and an indication of the current physical location of the inventory item”—upon which the generic computer operations are performed—is non-functional descriptive material related to the RFID tag, and lacks patentable weight. Whether the recited “inventory item information” is related to an item of inventory does not affect the operations of the “access” or “tracking” limitations, rather the information is simply stored and provided to a user. *See Ngai*, 367 F.3d at 1339; *In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983) (holding when descriptive material is not functionally related to the substrate, the descriptive material will not distinguish the invention from the prior art in terms of patentability). It is the RFID tag that has a functional relationship

to the limitations of the claim, i.e. the location of the inventory item is commensurate with the location of the RFID tag such that it is the RFID tag's location which is detected and updated in claim 1. Claims 1, 17, and 27 do not use the item information for any purpose specific to inventory other than storing and presenting the item information to the user. Thus, we find that item inventory information is simply data representing some information about an item.

iii. Hofer Is Enabled

Patent Owner argues “Hofer/Bloy does not describe any features of inventory management using RFID tags, let alone describe them in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention.” PO Resp. 11 (citations omitted). Patent Owner further argues “Hofer/Bloy provides, in just one sentence, a passing reference to ‘inventory control.’ That sentence states, ‘[t]he invention provides direction and velocity tracking, useful for example to identify movement of targets into areas where additional actions may be desired, such as user access, process control, inventory control and/or theft prevention.’” PO Resp. 11–12 (citing Ex. 1008, 21–22). Finally, Patent Owner argues:

Hofer/Bloy says nothing about . . . “inventory item information.” Without knowing information about the inventory in addition to the physical locations of the inventory itself, a user attempting to manage inventory with the Hofer/Bloy system is left with a disorganized pool of tag locations and no link between the tags and what they are attached to.

Id. at 13.

When a party asserts that a prior art patent anticipates specific patent claims, the party enjoys a presumption that the anticipating disclosure also

enables the claimed invention. *Impax Labs., v. Aventis Pharms. Inc.*, 468 F.3d 1366, 1382 (Fed. Cir. 2006). However, the presumption can be overcome with persuasive evidence showing that the prior art patent does not enable the claimed invention. *Id.*

Petitioner points out that Bloy discusses inventory control in more than just one sentence. Pet. Reply. 13. Bloy recites the use of RFID tags in connection with “inventory feedback and control,” such as by tracking “a pallet load of materials individually marked with RFID tags entering or leaving a warehouse.” Ex. 1008, 4. Bloy, in describing previous entry/exit systems, further recites that “[previous systems do] not provide a specific location and/or direction of travel, other than by transient association between the tags or tagged items and the location of the reader at the time of interrogation” and thus, the disclosure of Bloy overcomes “a collective mindset in the signal acquisition and source location technology space that RFID technology in particular is applicable only with respect to gateway type exit/entry and or general presence detection and reporting function(s).” *Id.* We recognize the presumption of enablement and Bloy’s explicit description of associating inventory with a location. Thus, even if the item inventory information and at least a subset thereof were given patentable weight, we find that Bloy, and thus Hofer, is enabled for the purpose of anticipation.

iv. Anticipation

Petitioner provides citations to Bloy that allegedly disclose the tracking system and access system limitations recited in claims 1, 17, and 27, along with explanations of those citations. Pet. 24–26, App. C, 7–10; Second Pet. 25–30, App. C, 1–8, 12–14. As explained further below, we

adopt those citations and explanations that specifically relate to claims 1, 17, and 27 except the following: “the remaining elements of independent claim 1 recite little more than generic computer hardware performing generic computer operations and add no patentable weight to independent claim 1. *See Alice*, Slip Opinion No. 13-298”³ (Pet. 27); and “the remaining elements of independent claims 17 and 27 recite little more than generic computer hardware performing generic computer operations and add no patentable weight to independent claims 17 and 27. *See Alice*, Slip Opinion No. 13-298.” (Second Pet. 30).

Claim 1 recites “[a]n inventory tracking system for use in tracking placement of physical items within an inventory tracking region.” Claims 17 and 27 recite “[a] method of tracking inventory within an inventory region.” As noted above, we find that the preamble is not limiting. Nevertheless, Hofer and Bloy disclose the elements of the preamble. Hofer discloses “[i]t is an object of the invention to provide an object monitoring solution[.]” Ex. 1007 1:65–66. Bloy discloses “[t]he inventors have developed an RF signal intelligent tracking and control system (ITCS) 5[.]” Ex. 1008, 5.

Claim 1 recites “a plurality of radio frequency antennas disposed in a spaced apart manner within the inventory tracking region.” Hofer discloses “[a]dditional intelligent steerable phased array antenna module(s) 10 may also be included, each delivering a data set 34 to the location processor 14.” Ex. 1007, 3:12–15.

³ The updated *Alice* cite is *Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347, 189 L.Ed.2d 296 (2014).

Claim 1 recites “a detection controller coupled to the plurality of radio frequency antennas.” Hofer discloses:

[a]n RFID reader module 16 directs an interrogation signal to and receives corresponding signals from the steerable phased array antenna 18 through the RF port 20 of a multi-frequency transceiver 22. The transceiver 22 processes the desired signals through digital to analog transmit and analog to digital receive converters 24 for each of transmit and receive signal paths according to control instructions from a protocol processor 26.
Ex. 1007, 2:50–57; *see also id.* at 2:46–50; 3:15–17 (“An output 36 of the location processor comprises the tag identifier, time stamp and three dimensional location of the associated RFID tag 38.”).

Claim 1 recites “a beam-steering control system that controls the operation of each of the radio frequency antennas.” Hofer discloses “[t]he intelligent steerable phased array antenna module 10 is demonstrated with a beam steering unit 12 under the control of a location processor 14.” Ex. 1007, 2:47–50.

Claim 1 recites “wherein one of the plurality of radio frequency antennas uses a beam to scan a portion of the inventory tracking region to detect a current physical location of one or more radio frequency tags disposed in a scanned portion of the inventory tracking region.”⁴ Claims 17

⁴ Claims 17 and 27 recite “periodically scanning the inventory region with one or more radio frequency antennas using a beam steering scanning technique.” Claim 27 further recites “one of the one or more radio frequency antennas scans a portion of the inventory region to detect one or more radio frequency tags disposed in a scanned portion of the inventory region, each of the one or more radio frequency tags being associated with a different inventory item.” Claim 17 recites “wherein one of the one or more radio frequency antennas scans a portion of the inventory region to detect one or more radio

and 27 are limited to “periodically scanning.” Hofer discloses using a beam to scan an area for the location of RFID tags. *Id.* at 3:8–19, 30–35, 44–47. Bloy discloses that an RFID tag can be scanned for inventory tracking. Ex. 1008, 4–5. Hofer discloses that a “plurality of data sets” are gathered through scanning. Ex. 1007, 3:32–33. We find that in order to gather multiple data sets at least two scans needed to separate by some period of time. Thus, Hofer discloses periodically scanning. Claim 27 is limited to RFID tags being associated with a different inventory item. Bloy discloses “RFID tags may be read by readers (also known as interrogators) in order to collect the identity of the RFID tags and therefore by association the identity of the item to which the tag is attached . . . such as a pallet load of material individually marked with RFID tags entering or leaving a warehouse for inventory feedback and control[.]” Ex. 1008, p. 2. Thus, individual RFIDs are associated with individual inventory items.

Claim 1 recites “wherein the current physical location corresponds to a position defined by two coordinate units in a multidimensional coordinate system and the value of each of the two coordinate units is determined by the one of the plurality of radio frequency antennas.”⁵ Hofer discloses beam

frequency tags disposed in a scanned portion of the inventory region, each of the one or more radio frequency tags being associated with an inventory item.”

⁵ Claims 17 and 27 recite “determining a current physical location for the one or more detected radio frequency tags in the scanned portion within the inventory region based on the detection of the one or more radio frequency tags within a scan wherein the current physical location corresponds to a position defined by two coordinate units in a multidimensional coordinate system and the value of each of the two coordinate units is determined by the one of the one or more radio frequency antennas and wherein the current physical location

steering unit 12 of intelligence steerable phased array antenna module 10 delivers Theta and Phi direction coordinates of interrogation beam to location processor 14, and RFID reader module 16 of intelligent steerable phased array antenna module 10 delivers tag ID and tag response signal phase information. Ex. 1007, FIG. 1, 3:8–19. Claims 17 and 27 are limited to “wherein the current physical location for the one or more detected radio frequency tags is resolved to a region less than the coverage area of any of the radio frequency antennas.” Hofer discloses that:

[t]o apply phase ranging to the RFID tag scan data, for a beam direction at which an RFID tag 38 has been detected, the beam extent or a shorter segment of interest of the beam extent at the instant direction is derived, at 52. . . . The ends of the beam extent identified at 52 may be referenced as MIN and MAX, representing the minimum distance and the maximum distance, respectively, that the present RFID tag 38 is expected to be from the antenna, along the present beam direction.

Ex. 1007, 4:1–4, 4:29–33; *see also id.* at 4:5–28 (describing a scan sweep of a volume), 4:48–5:45 (describing the use of phase ranging to determine distance of the RFID tag along the signal beam from the antenna), 5:46–54 (describing a refinement of the location process).

Claim 1 recites “wherein the detection controller generates indications of the one or more detected radio frequency tags and the current physical locations of the one or more detected radio frequency tags in the scanned portion within the inventory tracking region.” Hofer discloses “[a]n output 36 of the location processor 14 comprises the tag identifier, time stamp and

for the one or more detected radio frequency tags is resolved to a region less than the coverage area of any of the radio frequency antennas.”

three dimensional location of the associated RFID tag 38.” Ex. 1007, 3:15–17.

Claim 1 recites “a tracking system coupled to the radio frequency tag detection system to receive the indications of the one or more detected radio frequency tags and the current physical locations of the one or more detected radio frequency tags in the scanned portion within the inventory tracking region” and “a memory for storing inventory item information for each of a plurality of inventory items, the inventory item information for each of the plurality of inventory items including an inventory item radio frequency tag identifier, inventory item identification information defining the identity of the inventory item, and an indication of the current physical location of the inventory item within the inventory tracking region.”⁶ Bloy discloses:

[a] processor . . . is operatively coupled to the RF transceiver 12 and the electronic steering circuit 16 . . . The signal data record including at least a signal identification, a received signal strength indicator and an RF signal direction along which respective signal(s) are received by the antenna 14. The RF signal direction is derived from the electronic steering circuit 16 and a position logic operative upon the signal data record(s) is applied to derive a three dimensional signal original location of

⁶ Claim 17 recites “storing, in a computer readable memory, for each of the one or more detected radio frequency tags, inventory item information, wherein the inventory item information for a radio frequency tag includes an inventory item radio frequency tag identifier, inventory item identification information defining the identity of the inventory item, and current physical location information for the inventory item.” Claim 17 recites “storing inventory item information in a computer readable memory for each of the different inventory items, the inventory item information for a particular inventory item including a radio frequency tag identifier, inventory item identification information defining the identity of the inventory item, and current physical location information for the inventory item.”

each response signal . . . where the response signal is from an RFID tag, the *signal identification can be* the RFID tag identification or *item identity*.

Ex. 1008, 8–9 (emphases added). Thus, Bloy stores the identity of an “item” associated with an RFID tag. As noted above, we give no patentable weight to the inventory aspect of the claimed “item inventory information.” Thus, Bloy discloses the limitation at issue. Alternatively, if inventory is given patentable weight, Bloy explicitly states that the item being tracked may be inventory. Ex. 1008, 4 (monitoring entry and exit of “a pallet load of materials individually marked with RFID tags”).

Claim 1 recites “a memory for storing inventory item information for each of a plurality of inventory items, the inventory item information for each of the plurality of inventory items including an inventory item radio frequency tag identifier, inventory item identification information defining the identity of the inventory item, and an indication of the current physical location of the inventory item within the inventory tracking region.” Bloy discloses “[t]he processor is preferably provided with a data storage 26, for example a hard drive ... for storing a signal data record for each of at least one response signal(s) received by the RF transceiver” and that “[t]he signal data record including at least a signal identification, a received signal strength indicator and an RF signal direction along which respective signal(s) are received by the antenna 14.” Ex. 1008, 9. “[S]ignal identification can be the RFID tag identification or item identity.” *Id.* The strength and direction of the signal indicate the current physical location of the RFID tag.

Claim 1 recites “an access system that accesses the memory and provides at least a subset of the inventory item information for one or more of the inventory items to a user for determining the current physical location of the one or more of the inventory items within the inventory tracking region.”⁷ As noted above, Bloy discloses storing the item identity and physical location of an RFID tag. See Ex. 1008, 9. Item identity meets the limitation to at “at least a subset” because even if item identity is the whole of item inventory information, the whole may be more than a subset but the claim requires *at least* a subset which suggests more than a subset may be stored.

Bloy further discloses “[t]he SASL module(s) 10 and or edge server 34 if present are coupled to an operator interface such as computer display and or a user accessible web page for control and feedback.” Ex. 1008, 19. Thus, information necessary for control is displayed to the user. As noted above, we give no patentable weight to the inventory aspect of the claimed “item inventory information.” Ex. 1008, 19. Thus, Bloy meets the limitation at issue. Alternatively, if inventory is given patentable weight, Bloy explicitly states that the item being tracked may be inventory. Ex. 1008, 4 (monitoring entry and exit of “a pallet load of materials individually marked with RFID tags”).

Claim 1 recites:

⁷ Claim 17 recites “accessing the stored inventory item information to determine the current physical location of the one or more of the set of inventory items within the inventory region. Claim 27 recites “enabling access to the stored inventory item information for each of the inventory items to determine the current physical location of the inventory items within the inventory region.”

the tracking system updates the indication of the current physical location of at least one particular inventory item within the inventory tracking region as stored in the memory for the at least one particular inventory item based on the indication of the current physical location of the one or more detected radio frequency tags for at the least one particular inventory item as produced by the detection controller.⁸

Bloy discloses:

[t]he edge server 34 and or processor 28 of each SASL module 10 may also perform comparisons of changes between the three dimensional signal origin location resulting from successive interrogation signal sweeps of the zone and apply same as inputs to a velocity and or direction logic, to determine a speed and direction indication for each response signal.

Ex. 1008, 18.

Upon review of Petitioner's analysis and supporting evidence and Patent Owner's analysis and supporting evidence, for the reasons set forth above, we are persuaded that Petitioner has shown by a preponderance of the evidence that claims 1, 17, and 27 are unpatentable under 35 U.S.C. § 102 as anticipated by Hofer.

⁸ Claim 17 recites "updating the current physical location information of at least one inventory item within the inventory region as stored in the computer readable memory based on the determined current physical location of the one or more detected radio frequency tags for the at the least one inventory item as determined during one or more scans." Claim 27 recites "updating the current physical location information of each of the inventory items within the inventory region as stored in the computer readable memory based on the determined current physical location of the one or more detected radio frequency tags for the inventory items as determined during one or more Scans."

V. CONCLUSION

Petitioner has shown by a preponderance of the evidence that claims 1, 17, and 27 are unpatentable under 35 U.S.C. § 102 as anticipated by Hofer.

VI. ORDER

For the reasons given, it is

ORDERED that claims 1, 17, and 27 of U.S. Patent 8,690,057 are *unpatentable*; and

FURTHER ORDERED that because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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