

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Phillippe Bottine and François Robin
U.S. Patent No.: 11,010,709 Attorney Docket No.: 186063.IPR709
Issue Date: May 18, 2021
Appl. Serial No.: 15/747,550
Filing Date: July 25, 2016
Title: METHOD FOR UPDATING ASSOCIATION DATA
BETWEEN ARTICLES AND LOCATIONS

DECLARATION OF DR. MANOS M. TENTZERIS

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

By: / Manos M. Tentzeris /

Manos M. Tentzeris, Ph.D.

TABLE OF CONTENTS

I. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE	4
II. LEGAL STANDARDS	8
A. Terminology	8
B. Legal Standards for Obviousness	9
C. Level Of Ordinary Skill In The Art.....	15
III. THE '709 PATENT	16
A. Overview of the '709 Patent.....	16
B. Prosecution History of the '709 Patent	19
C. Interpretation of the '709 Patent Claims at Issue	21
IV. APPLICATION OF PRIOR ART TO THE '709 PATENT CLAIMS	22
Ground 1: Claims 1-5, 10, 11-15, 20 are Rendered Obvious over Wu	22
Overview of Wu.....	22
Claims 1-5, 10, 11-15, 20 are obvious over Wu.....	27
Motivation to Combine Wu's Various Embodiments	60
Ground 2: Claims 1-6, 10, 11-16, 20 are Rendered Obvious by Wu in Combination with Chaves.....	65
Overview of Chaves.....	65
Claims 1-5, 10, 11-15, 20.....	67
Claims 6 and 16.....	72
Motivation to Combine Wu and Chaves.....	75
Ground 3: Claims 1-5, 7-9, 10, 11-15, 17-20 are Rendered Obvious by the Combination of Wu, Itou, and Auclair	80
Overview of Itou	80
Overview of Auclair.....	84
Claims 1-5, 10, 11-15, 20.....	86
Claims 7-9, 17-19.....	88

Motivations to Combine Wu, Itou, and Auclair	93
Ground 4: Claims 1-5, 10, 11-15, 20 are Rendered Obvious by Wu in Combination with Fujiwara	99
Overview of Fujiwara	99
“retail area”	100
“acquiring, by a reading device, a sequence of label identifiers”.....	100
“transmitting, by the reading device, the sequence of label identifiers to the computer system”	102
Motivation to Combine Wu and Fujiwara	104
V. CONCLUSION	106

I. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

1. My education and experience are described more fully in the attached *curriculum vitae* (Ex.1010). For ease of reference, I have highlighted certain information below.

2. I am currently the Ken Byers Professor in Flexible Electronics in the School of Electrical and Computer Engineering (ECE) at the Georgia Institute of Technology (Georgia Tech).

3. I received a Diploma degree in Electrical Engineering and Computer Science (Magna Cum Laude) from the National Technical University in Athens, Greece, in 1992. I received M.S. and Ph.D. degrees in Electrical Engineering and Computer Science from the University of Michigan, Ann Arbor, in 1993 and 1998, respectively.

4. My research interests relate to printed radio frequency (RF) electronics, batteries, and sensors; radio frequency identification (RFID) antennas and architectures, and antenna integration and miniaturization techniques, among others.

5. I have served as the Head of the Electromagnetics Technical Interest Group of the School of ECE, Georgia Tech. I have also served as the Georgia Electronic Design Center Associate Director for RFID/Sensors research from 2006-2010 and

as the GT-Packaging Research Center (NSF-ERC) Associate Director for RF research and the leader of the RF/Wireless Packaging Alliance from 2003-2006.

6. I have made extensive contributions to professional societies in my field, including the Institute of Electrical and Electronics Engineers (IEEE). I am the Founder and Chair Emeritus of the IEEE MTT-S (Microwave Theory and Techniques Society) TC-24 (RFID Technologies). I am a member of the technical program committees of IEEE-IMS (International Microwave Symposium), IEEE-APS (Antennas and Propagation Symposium) and IEEE-ECTC (Electronic Components and Technology Conference) Symposia. I was the General Co-Chair of IEEE APS 2019 (Antennas and Propagation Symposium). I was also the TPC (Technical Program Competitions) Chair for the IMS (International Microwave Symposium) 2008 Conference and the Co-Chair of the ACES (Applied Computational Electromagnetics Society) 2009 Symposium. I was also the Chairman for the 2005 IEEE CEM-TD (Computational Electromagnetics in Time-Domain) Workshop. I was the Chair of IEEE-CPMT TC16 (Components, Packaging, and Manufacturing Technology) (RF Subcommittee) as well as the Chair of IEEE MTT/AP (Microwave Theory and Techniques / Antennas and Propagation) Atlanta Sections for 2003.

7. Throughout my career, I have received a variety of awards. I am a Fellow of IEEE, a member of the MTT-15 Committee, an Associate Member of European Microwave Association (EuMA), a Fellow of the Electromagnetics Academy, and

a member of Commission D, URSI and of the Technical Chamber of Greece. I am currently an IEEE EPS (Electronics Packaging Society) Distinguished Lecturer and I have served as an IEEE C-RFID (Committee on RFIDs) Distinguished Lecturer and as an IEEE MTT-S (Microwave Theory and Techniques Society) Distinguished Microwave Lecturer (DML).

8. I have published more than 850 papers in refereed journals and conference proceedings, 6 books, and 27 book chapters, as noted in my CV.

9. I have been retained on behalf of Hanshow America Inc. and Hanshow Technology Co., Ltd. (collectively, “Hanshow” or “Petitioners”) to offer technical opinions relating to U.S. Patent No. 11,010,709 (“the ’709 Patent”) and prior art references relating to its subject matter. I have reviewed the ’709 Patent (Ex.1001), and relevant excerpts of the prosecution history of the ’709 Patent (Ex.1002). I have also reviewed the following prior art and corroborating references:

- 1003 U.S. Patent No. 9,378,513 (“Wu”)
- 1004 U.S. Patent Application Publication No. 2017/0293959A1 (“Itou”)
- 1005 U.S. Patent Application Publication No. 2013/0325638A1 (“Auclair”)
- 1006 U.S. Patent Application Publication No. 2009/0231135A1 (“Chaves”)

- 1007 Certified translation of Japan Patent Application Publication
No. 2008-77131A by Fujiwara (“Fujiwara”)

10. I have also reviewed various supporting references and other documentation as further noted in my opinions below.

11. Counsel has informed me that I should consider these materials through the lens of one of ordinary skill in the art related to the '709 Patent at the time of the earliest possible priority date of the '709 Patent, and I have done so during my review of these materials. The application leading to the '709 Patent was filed July 25, 2016 (“the Critical Date”). Counsel has informed me that the Critical Date represents the earliest possible priority date to which the challenged claims of '709 Patent are entitled, and I have therefore used that Critical Date in my analysis below.

12. I have no financial interest in the parties or in the outcome of this proceeding. I am being compensated for my work as an expert on an hourly basis. My compensation is not dependent on the outcome of these proceedings or the content of my opinions.

13. In writing this declaration, I have considered the following: my own knowledge and experience, including my work experience in the fields of computer science, computer engineering and electrical engineering; my experience in teaching those subjects; and my experience in working with others

involved in those fields. In addition, I have analyzed various publications and materials, in addition to other materials I cite in my declaration.

14. My opinions, as explained below, are based on my education, experience, and expertise in the fields relating to the '709 Patent. Unless otherwise stated, my testimony below refers to the knowledge of one of ordinary skill in the fields as of the Critical Date, or before. Any figures that appear within this document have been prepared with the assistance of Counsel and reflect my understanding of the '709 Patent and the prior art discussed below.

15. This declaration explains the conclusions that I have formed based on my analysis. To summarize those conclusions, based upon my knowledge and experience and my review of the prior art publications listed above, I believe that:

- Claims 1-5, 10, 11-15, and 20 are rendered obvious by Wu
- Claims 1-6, 10, 11-16, and 20 are rendered obvious by Wu in combination with Chaves;
- Claims 1-5, 7-9, 10, 11-15, 17-19, and 20 are rendered obvious by Wu in combination with Itou and Auclair;
- Claims -5, 10, 11-15, and 20 are rendered obvious by Wu in combination with Fujiwara.

II. LEGAL STANDARDS

A. Terminology

16. I have been informed by Counsel and understand that the best indicator of claim meaning is its usage in the context of the patent specification as understood by one of ordinary skill. I further understand that the words of the claims should be given their plain meaning unless that meaning is inconsistent with the patent specification or the patent's history of examination before the Patent Office. Counsel has also informed me, and I understand that, the words of the claims should be interpreted as they would have been interpreted by one of ordinary skill at the time of the invention was made (not today). Because I do not know at what date the invention as claimed was made, I have used the earliest possible priority date of the '709 Patent as the point in time for claim interpretation purposes. That date was July 25, 2015, the Critical Date.

B. Legal Standards for Obviousness

17. I have been informed by Counsel and understand that documents and materials that qualify as prior art can render a patent claim unpatentable as obvious. I am informed by Counsel and understand that all prior art references are to be looked at from the viewpoint of a person of ordinary skill in the art at the time of the invention, and that this viewpoint prevents one from using his or her own insight or hindsight in deciding whether a claim is obvious.

18. I have been informed by Counsel and understand that a claim is unpatentable for obviousness under 35 U.S.C. § 103 (in the AIA form of that

statute that applies to the '709 Patent) “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” I am informed by Counsel and understand that obviousness may be based upon a combination of references. I am informed by Counsel and understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. However, I am informed by Counsel and understand that a patent claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.

19. I am informed by Counsel and understand that when a patented invention is a combination of known elements, a court must determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue by considering the teachings of prior art references, the effects of demands known to people working in the field or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. I am informed by Counsel and understand that the framework for the objective analysis for determining obviousness is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Under this framework, obviousness is a question of law based on underlying factual inquiries.

The factual inquiries enunciated by the Court are as follows: (1) determining the scope and content of the prior art; (2) ascertaining the differences between the claimed invention and the prior art; and (3) resolving the level of ordinary skill in the pertinent art. I am further informed by Counsel and understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. Such obvious combination occurs when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, when a patent claims a device combining pre-existing elements that each do no more than they would in separate, sequential operation, and when a patent simply arranges old elements, with each performing the same function it had been known to perform, and yields no more than one would expect from such an arrangement.

20. I am informed by Counsel and understand that a patent claim composed of several limitations is not proved obvious merely by demonstrating that each of its limitations was independently known in the prior art. I am informed by counsel for the Petitioner and understand that identifying a reason those elements would be combined can be important because inventions in many instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known. I am informed by Counsel and understand that it is improper

to use hindsight in an obviousness analysis, and that a patent's claims should not be used as a "roadmap."

21. I am informed by Counsel and understand that an obviousness inquiry requires consideration of the following factors: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) any objective indicia of non-obviousness, such as commercial success, long-felt but unresolved need, failure of others, industry recognition, copying, and unexpected results. I understand that the foregoing factors are sometimes referred to as the "Graham factors."

22. I have been informed by Counsel and understand that an obviousness evaluation can be based on a combination of multiple prior art references. I understand that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but that the nexus linking two or more prior art references is sometimes simple common sense. I have been informed by Counsel and understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references may be supplied by the direction of the marketplace.

23. I have been informed by Counsel and understand that if a technique has been used to improve one device, and a person of ordinary skill at the time of invention would have recognized that it would improve similar devices in the

same way, using the technique is obvious unless its actual application is beyond his or her skill.

24. I have been informed by Counsel and understand that practical and common sense considerations should guide a proper obviousness analysis, because familiar items may have obvious uses beyond their primary purposes. I have been informed by Counsel and understand that a person of ordinary skill looking to overcome a problem will often be able to fit together the teachings of multiple prior art references. I have been informed by Counsel and understand that obviousness analysis therefore takes into account the inferences and creative steps that a person of ordinary skill would have employed at the time of invention.

25. I have been informed by Counsel and understand that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill at the time of invention, not just the patentee. Accordingly, I understand that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

26. I have been informed by Counsel and understand that a claim can be obvious in light of a single reference, without the need to combine references, if the elements of the claim that are not found explicitly or inherently in the reference can be supplied by the common sense of one of skill in the art.

27. I have been informed by Counsel and understand that secondary indicia of non-obviousness may include (1) a long felt but unmet need in the prior art that was satisfied by the invention of the patent; (2) commercial success of processes covered by the patent; (3) unexpected results achieved by the invention; (4) praise of the invention by others skilled in the art; (5) taking of licenses under the patent by others; (6) deliberate copying of the invention; (7) failure of others to find a solution to the long felt need; and (8) skepticism by experts. I understand that evidence of secondary indicia of non-obviousness, if available, should be considered as part of the obviousness analysis.

28. I have been informed by Counsel and understand that there must be a relationship between any such secondary considerations and the invention, and that contemporaneous and independent invention by others is a secondary consideration supporting an obviousness determination.

29. In sum, my understanding is that prior art teachings are properly combined where one of ordinary skill having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims. Under this analysis, the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of multiple prior art references in the claimed manner.

30. I have been informed by Counsel and understand that in an *inter partes* review, “the petitioner shall have the burden of proving a proposition of unpatentability,” including a proposition of obviousness, “by a preponderance of the evidence.” 35 U.S.C. §316(e).

C. Level Of Ordinary Skill In The Art

31. In my opinion, a person of ordinary skill in the art (“POSITA”) relating to, and at the time of, the ’709 Patent’s Critical Date would have been someone with at least a Master of Science Degree in an academic area emphasizing electrical engineering, computer engineering, wireless telecommunication systems, or an equivalent field (or a similar technical Master’s Degree, or higher degree). Alternatively, a POSITA would have had a Bachelor’s Degree (or higher degree) in an academic area emphasizing electrical engineering, computer engineering, wireless telecommunication systems, or an equivalent field with two or more years of work experience in electrical engineering, computer engineering, wireless telecommunication systems, or an equivalent field. Additional education in a relevant field, or relevant industry experience may compensate for a deficit in one of the other aspects of the requirements stated above.

32. Based on my knowledge, skill, and experience, I have a good understanding of the capabilities of the POSITA. Indeed, I have taught, participated in organizations, and worked closely with many such persons over the course of my career. For example, from my industry experience, I am

familiar with what an engineer would have known and found predictable in the art. From teaching and supervising my post-graduate students, I also have an understanding of the knowledge that a person with this academic experience possesses. Furthermore, I possess those capabilities myself.

III. THE '709 PATENT

A. Overview of the '709 Patent

33. Prior to the Critical Date of the '709 Patent, numerous products, publications, and patents existed that implemented or described the features claimed in the '709 Patent. The methods and systems of the '709 Patent were therefore well-known in the prior art as of the Critical Date. Further, to the extent there was any problem to be solved by the '709 Patent, it had already been solved in the prior art systems before the Critical Date of the '709 Patent as I discuss below.

34. The '709 patent “relates to the association between articles of a retail area and locations of said retail area.” Ex.1001 [1:19-20]. The “general aim” of '709 patent is to “propos[e] a method for keeping the planogram updated and in accordance with the real arrangement of products in the retail area.” *Id.*, [2:40-44].

35. Claims 1-6 relate to a method for updating a planogram to reflect an addition of a shelf label in a shelf of a retail area, where the planogram comprises association between a product, the shelf label and the position of the product and shelf label on the shelf of the retail area. *Id.*, [10:11-11:16]. Claims 5-6 require

that the added shelf label is an electronic shelf label. *Id.* Claim 10 recites a non-transitory computer program product to implement the methods. *Id.*, [11:43-12:12]. Claims 11 adapts the same features of Claim 1 to claim a system to implement Claim 1, and adds the limitation that the plurality of shelf labels are electronic. *Id.*, [12:13-46]. Claims 12-16 add to Claim 11 the additional limitations that Claims 2-6 add to Claim 1. *Id.*, [12:47-13:13].

36. The claimed method and system involve the use of a reading device that acquires a sequence of label identifiers included in the ESLs. Ex. 1001 [6:25-29]. The reading device transmits to a computer system the sequence of the label identifiers. *Id.*, [7:9-12]. The reading device also transmits to the computer system the positioning of a label identifier of an added ESL relative to the sequence of label identifiers. *Id.*, [7:12-14].

37. The method propoerts to update the association data between articles, their respective label identifiers, and their locations along a shelf rail in a retail area. Ex. 1001, [5:28-29]. When an article is substituted by another at the same location the operator can successively acquire the label identifiers and send data to the computer system comprising the association data between the articles.” *Id.*, [5:29-38]. The data sent to the computer system is used to update the association data between the articles of the retail area and the locations of the retail area (*i.e.*, the planogram). *Id.*, [5:38-42], FIG. 1 (shown below) illustrates an example environment of the claimed system.

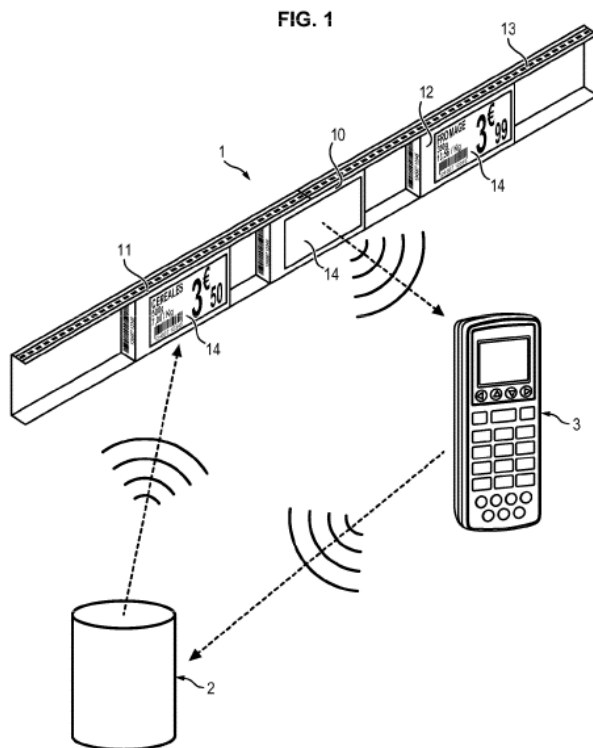
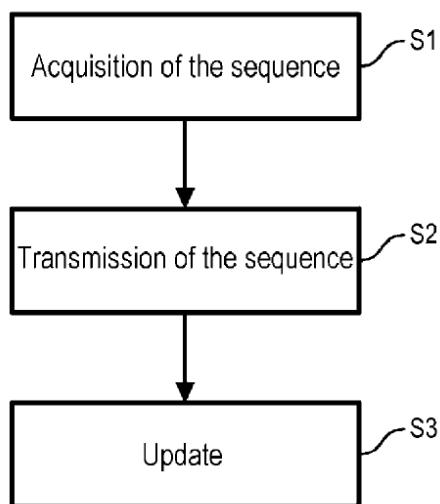


FIG. 1 of Ex. 1001.

38. FIG. 5 (shown below) generally defines the steps of the planogram updating method of claim 1:



Ex. 1001, FIG. 5.

39. The system of claim 11 uses the sequence of label identifiers to determine the location of the added ESL. Ex. 1001, [8:28-30]. The system also determines article association data, as the reading device transmits, at the same time as the label identifier of the added ESL, article information to allow the server to determine the article associated with the added ESL. *Id.*, [8:30-38]. For example, a first coordinate can designate the shelf of the retail area, while a second can designate a section of the shelf, a third can designate the level of the shelf, and a fourth can designate the order of the location on the level. *Id.*, [8:44-47]. In this way, the ESL and article are associated with a location. *Id.*, [8:51-52].

40. In my opinion, the prior art references cited in this declaration prove that the systems and methods claimed by the '709 patent were well-known before the claimed priority date of the '709 Patent.

B. Prosecution History of the '709 Patent

41. The '709 patent was granted on May 18, 2021. Ex. 1001.

42. The '709 patent was filed as U.S. national phase application of International Application No. PCT/FR2016/051930, which was filed on July 25, 2016, with a U.S. Patent Application No. 15/747,550 ("the '550 application). Ex.1002.

43. On June 8, 2020, the USPTO issued a Non-Final Rejection during the prosecution of the '550 application. All submitted claims of the '550 application were rejected. The claims were amended on October 7, 2020. The Examiner

Issued a Notice of Allowance on January 22, 2021. In the Notice of Allowance, the Examiner italicized certain claim features and noted that “the italicized limitations above **in combination** with the other limitations found within the independent claims are found to be allowable over the prior art of record.” Ex.1002 (emphasis in original).

44. The italicized limitations are:

“the retail area having a plurality of shelf labels distributed in the retail area, each of the shelf labels being associated with a respective article and being disposed near a respective location associated with the article, each of the shelf labels being associated with a label identifier of its own, wherein the adjacent shelf label is either the preceding shelf label or the following shelf label in the shelf according to the scrolling direction and in relation to the added shelf label, wherein a location of the adjacent shelf label is preliminarily known in the planogram; identifying a location corresponding to the added shelf label in the shelf of the retail area, comprising: transmitting, by the reading device, the sequence of label identifiers to the computer system, updating, by the computer system, the planogram on the basis of the sequence of label identifiers, by determining: articles associated with the labels of the sequence of label identifiers, and

locations of the articles, on the basis of an obtained location of the added shelf label, wherein the obtained location is a location in the planogram which is adjacent to the preliminarily known location of the adjacent shelf label.”

45. However, as explained in detail in this declaration, there is nothing new about these limitations, prior art references already combine many of them or render their combination obvious, and are are significant motivations to combine various prior art references. Notably, none of the prior art references discussed in this declaration were considered for the June 8, 2020 Non-Final Rejection.

C. Interpretation of the '709 Patent Claims at Issue

46. For purposes of my analysis in this IPR proceeding, I understand that the terms that appear in the claims of the '709 Patent should be interpreted according to their plain and ordinary meaning under the *Phillips* standard. In determining the ordinary and customary meaning, I understand that the words of a claim are first given their plain meaning that those words would have had to one of ordinary skill at the time of the alleged invention. I also understand that the structure of the claims, the specification and file history also may be used to better construe a claim insofar as the plain meaning of the claims cannot be understood. Moreover, I understand that treatises and dictionaries may be used, albeit under limited circumstances, to determine the meaning attributed by one of ordinary skill to a claim term at the time of filing. I have followed this approach in my analysis, and

for all of the claim terms considered in this declaration, I have applied the plain and ordinary meaning of those terms.

47. I also understand that the words of the claims should be interpreted as they would have been interpreted by one of ordinary skill at the time the invention was made (not today). For purposes of my analysis here, I have used July 25, 2016 as the date of invention. Without exception, however, my analysis of the proper meaning of the recited claim elements (under the *Phillips* standard) in this declaration would not change if the date of invention was anywhere in mid 2000s to the mid 2010s.

IV. APPLICATION OF PRIOR ART TO THE '709 PATENT CLAIMS

Ground 1: Claims 1-5, 10, 11-15, 20 are Rendered Obvious over Wu

48. In my opinion, Claims 1-5, 10, 11-15, 20 are rendered obvious by Wu, as disclosed in more detail below.

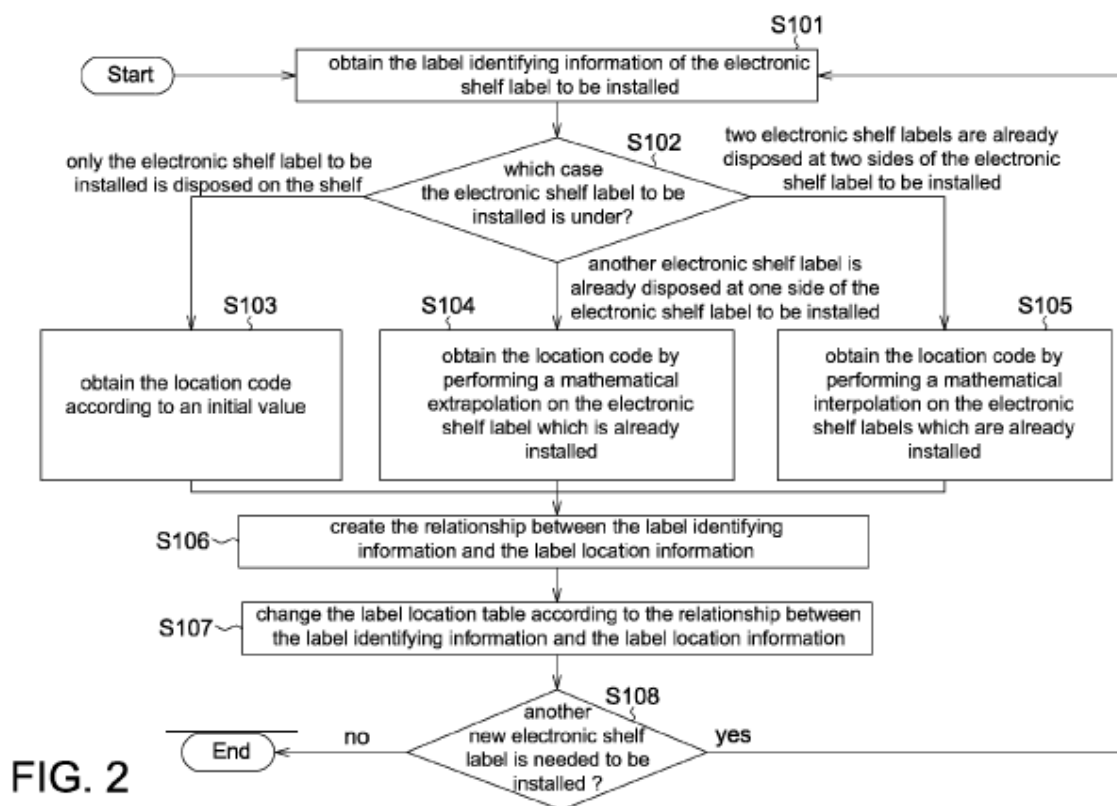
Overview of Wu

49. Wu discloses “[a]n electronic shelf label controlling system, an electronic shelf label installing method and an electronic shelf label updating method.” Ex. 1003, [Abstract].

50. Wu discloses a controlling system includes a controlling device that “stores a label location table” and a deploying device (*i.e.*, reading device) “used for obtaining [] label identifying information.” *Id.* This is a computer system.

51. The installing method of Wu involves the use of the reading device to obtain

a label identifier for the ESL that is installed, and, based on the planogram-registered location of adjacent ESLs, determining its relative location in a retail area. *See, e.g., id.*, FIG 2; [3:11-13] (“[T]he deploying device may be a Smartphone, a tablet PC or a handheld device”); [3:59-61] (“[T]he deploying device obtains the label identifying information of the electronic shelf label”); [2:66-67] (“[T]he controlling device may be a network server, a desktop[] computer or a notebook computer”); [1:45] (“The controlling device stores a label location table”).

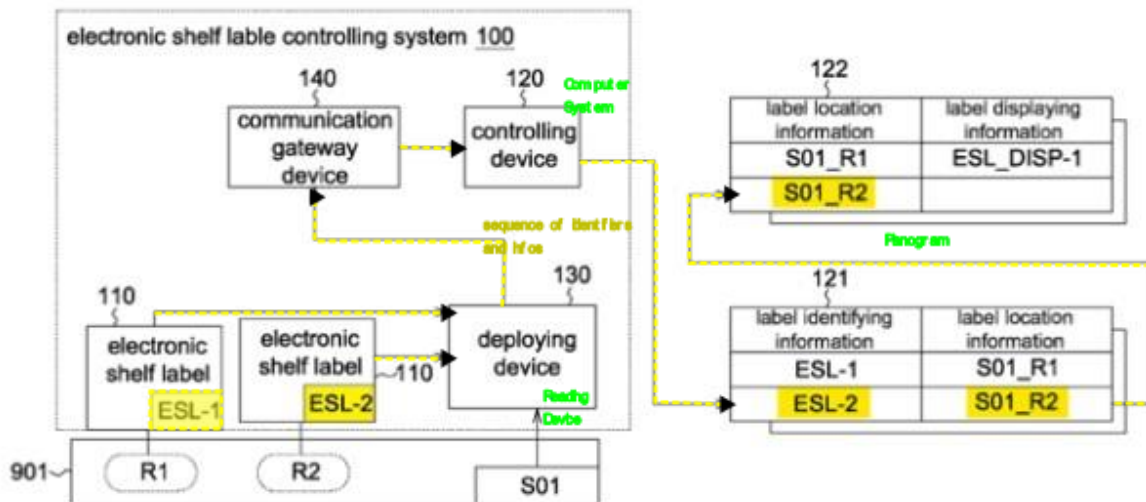


Ex. 1003, FIG. 2.

52. FIG. 3B of Wu shows an example of the ESL controlling system in the case where there is already another electronic shelf label “disposed at one side of the

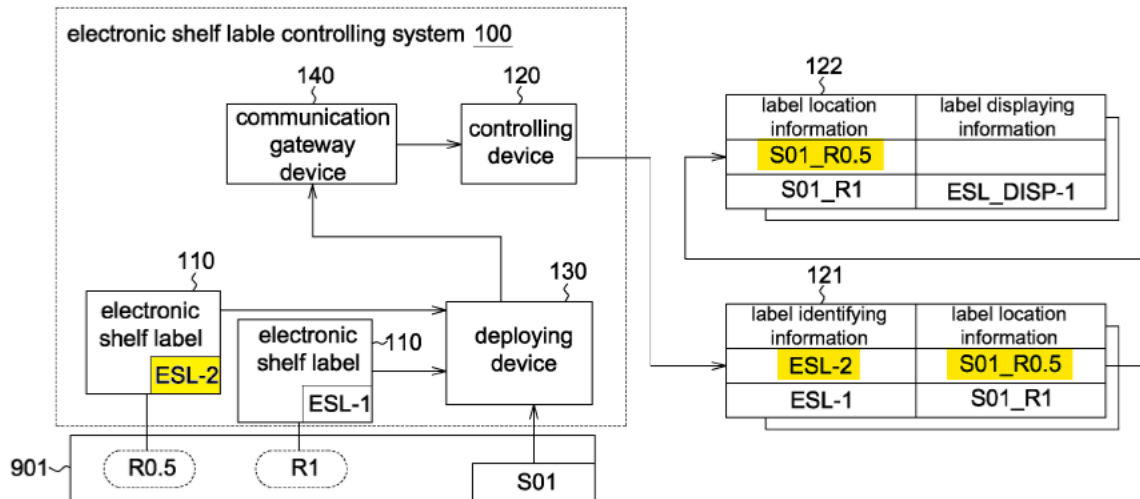
electronic shelf label to be installed and there is no electronic shelf label disposed at another side of the electronic shelf label to be installed[.]” *Id.*, [3:50-53].

53. In annotated FIG. 3B, below, highlighted shelf label 2 is the added ESL with label identifying information “ESL-2[.]” *Id.*, [4:55-59]. The figure illustrates data flow from ESL-1 (already installed in the same shelf) and ESL-2 (to be installed) to the reading device (controlling device 130), and, thereafter, to the computer system (controlling device 120). The controlling device then creates an entry in the label content table (122) serving as a planogram.



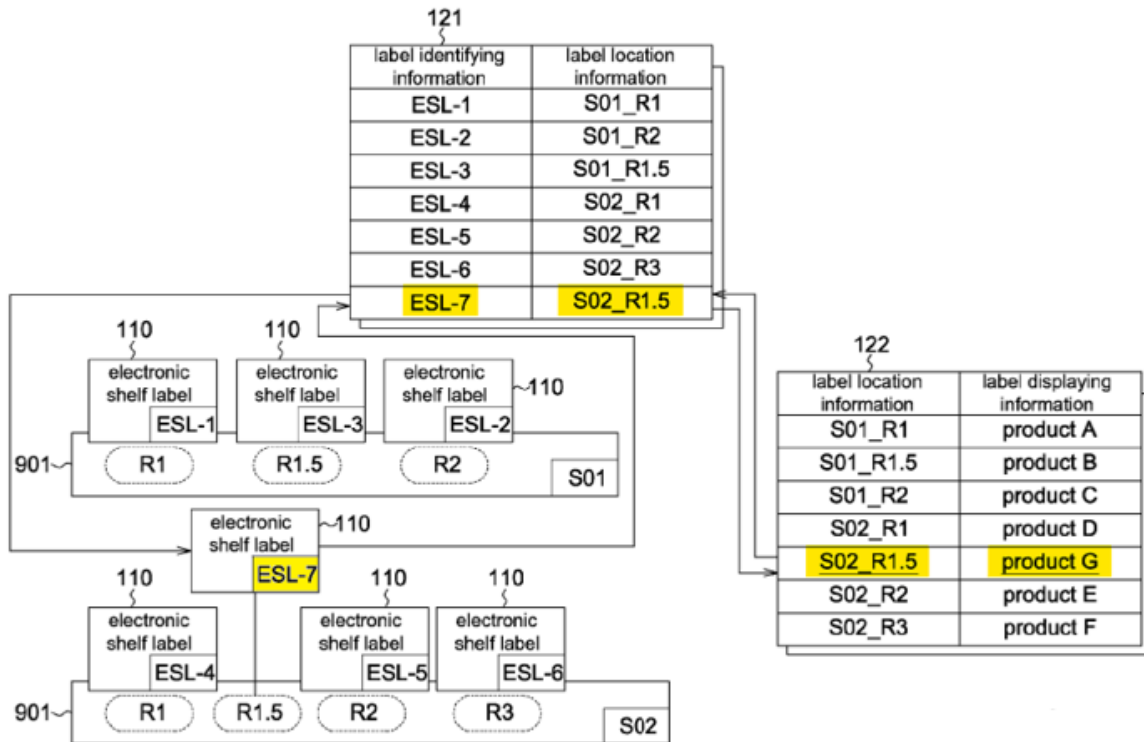
Ex. 1003, FIG. 3B (annotated).

54. FIG. 3C of Wu is the same system, with the added ESL at the opposite side of the preexisting ESL in the same shelf and from which a relative location is calculated. *Id.*, [5:12-17].



Ex. 1003, FIG. 3C (annotated).

55. FIG. 5C of Wu “shows an example of the electronic shelf label updating method” disclosed, in the case wherein a new ESL is added. *Id.*, [2:35-36]; *see also id.*, [6:4-6] (“at least one product is transferred and at least one electronic shelf label is needed to be installed”); [7:63-65] (“‘product G’ is newly added, so a new electronic shelf label is needed to be installed”).



Ex. 1003, FIG. 5C (annotated).

56. In my opinion, Wu is analogous prior art to the '709 Patent.

57. The '709 Patent is directed to methods and systems for updating a planogram including association data between articles and locations of such articles (Ex. 1001, [2:45-50, 3:65-68, 10:11-15]) while Wu is directed to providing “an electronic shelf label controlling system, an electronic shelf label installing method and an electronic shelf label updating method” (Ex. 1003, [1:37-39]) and the controlling system includes a controlling device communicating with a deploying device that is used for “reading the information of the shelf or the electronic shelf label” (Ex. 1003, [3:10-11]).

58. In my opinion, both Wu and the '709 Patent are in the same field of endeavor

for updating a planogram involving shelf labels because Wu and the '709 patent both manage association tables of electronic shelf labels with similar systems including similar components: computer system/controlling device, reading device/deploying device, and electronic shelf labels.

Claims 1-5, 10, 11-15, 20 are obvious over Wu

Claim 1

[1a]

59. In my opinion, Wu expressly discloses **a method for updating a planogram registered in a computer system, to reflect an addition of a shelf label in a shelf.**

60. This is supported by Ex. 1003. [1:37-39] (“The disclosure is directed to an electronic shelf label controlling system, and electronic shelf label installing method and an electronic shelf label updating method”); *see also* FIGs. 1 and 2.

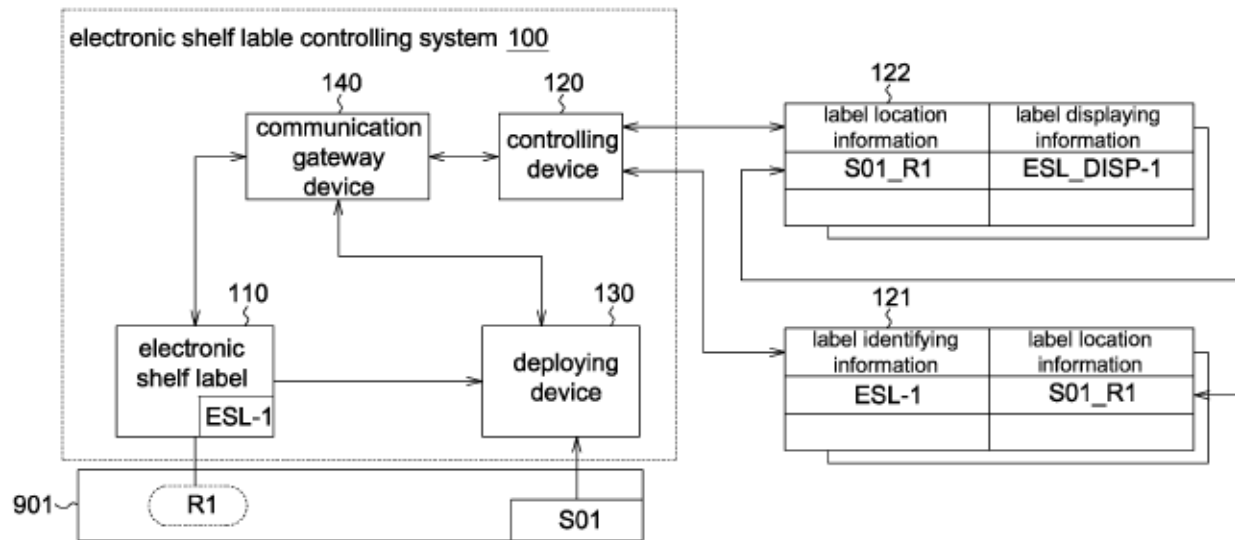


FIG. 1

Ex. 1003, FIG. 1.

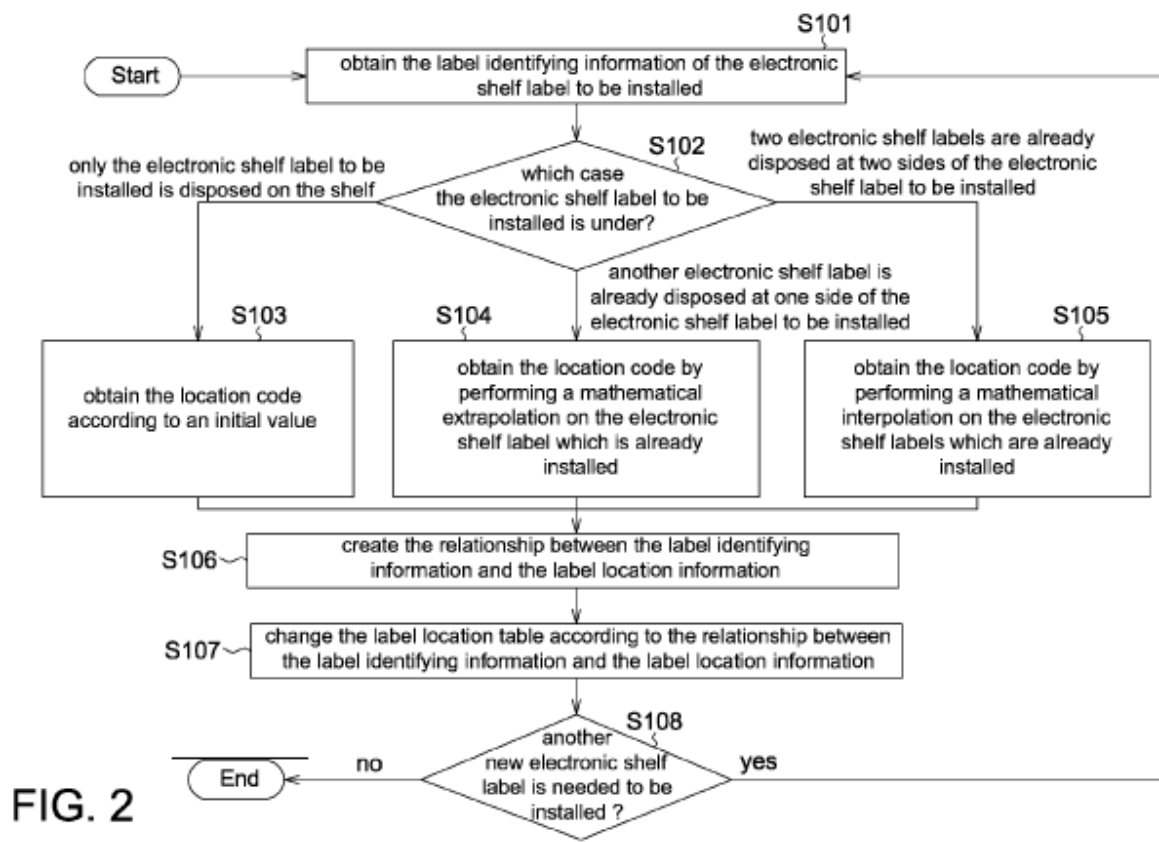


FIG. 2

Ex. 1003, FIG. 2.

61. Wu discloses that the “controlling system comprises an electronic shelf label, a controlling device, a deploying device and communication gateway device.” *Id.*, [1:40-44]. “[T]he controlling device may be a network server, a desktop[] computer, or a notebook computer.” *Id.*, [2:66-67].

62. In my opinion, this controlling device is a **computer system**.

63. Wu discloses that the controlling device (computer system) stores a label content table 122, associating location information with product information. Ex. 1003, [3:19-21]. FIG. 5C of Wu shows an example of such table.

122
↓

label location information	label displaying information
S01_R1	product A
S01_R1.5	product B
S01_R2	product C
S02_R1	product D
S02_R1.5	product G
S02_R2	product E
S02_R3	product F

Ex. 1003, FIG. 5C

64. This table is the claimed planogram. *See* Ex. 1001, [2:6-7] (defining a planogram as “a set of association data among articles of retail area and locations of said retail area”).

65. Wu discloses that this table can be **updated to reflect the addition of an electronic shelf label (ESL) in a shelf**. Ex. 1003, [3:45-47, 4:29-32].

66. Wu discloses that electronic shelf labels can be used in place of conventional

shelf labels, which are placed “on the shelf” and used “for informing the consumers the name, the price or the promotion of the products” that “are provided for consumers to choose” and “are arranged on a shelf” at a “business development.” Ex. 1003, [1:22-33].

67. To the extent that Wu does not specifically disclose a retail area, it is well known for a POSITA that such a business development with shelves on which products are arranged for consumers to choose can be a **retail area**.

68. Further, at the time of the claimed invention, it was well known to a POSITA that ESLs are widely used in retail areas, and a POSITA would be motivated to use the ESL system and accompanying planogram updating methods of Wu in a retail area (*i.e.*, a store), which requires no changes to Wu’s system and methods and represents nothing more than the application of known technique to a similar setting.

69. Therefore, in my opinion, Wu discloses [1a] or at least renders [1a] obvious.

[1b]

70. Wu discloses that the label content table 122 (the **planogram**) “records a relationship between a first label location information and a first label displaying information of a first electronic shelf label.” Ex. 1003, [1:64-67].

71. FIG. 5C of Wu depicts such a planogram associating products and locations.

72. In my opinion, these products and locations are **of the retail area**. Please refer to my discussions for [1a] above.

73. Thus, in my opinion, the planogram comprises **association data between articles of the retail area and locations of the retail area.**

122
5

label location information	label displaying information
S01_R1	product A
S01_R1.5	product B
S01_R2	product C
S02_R1	product D
S02_R1.5	product G
S02_R2	product E
S02_R3	product F

Ex. 1003, FIG. 5C.

74. Therefore, in my opinion, Wu discloses [1b] or at least renders [1b] obvious.

[1c]

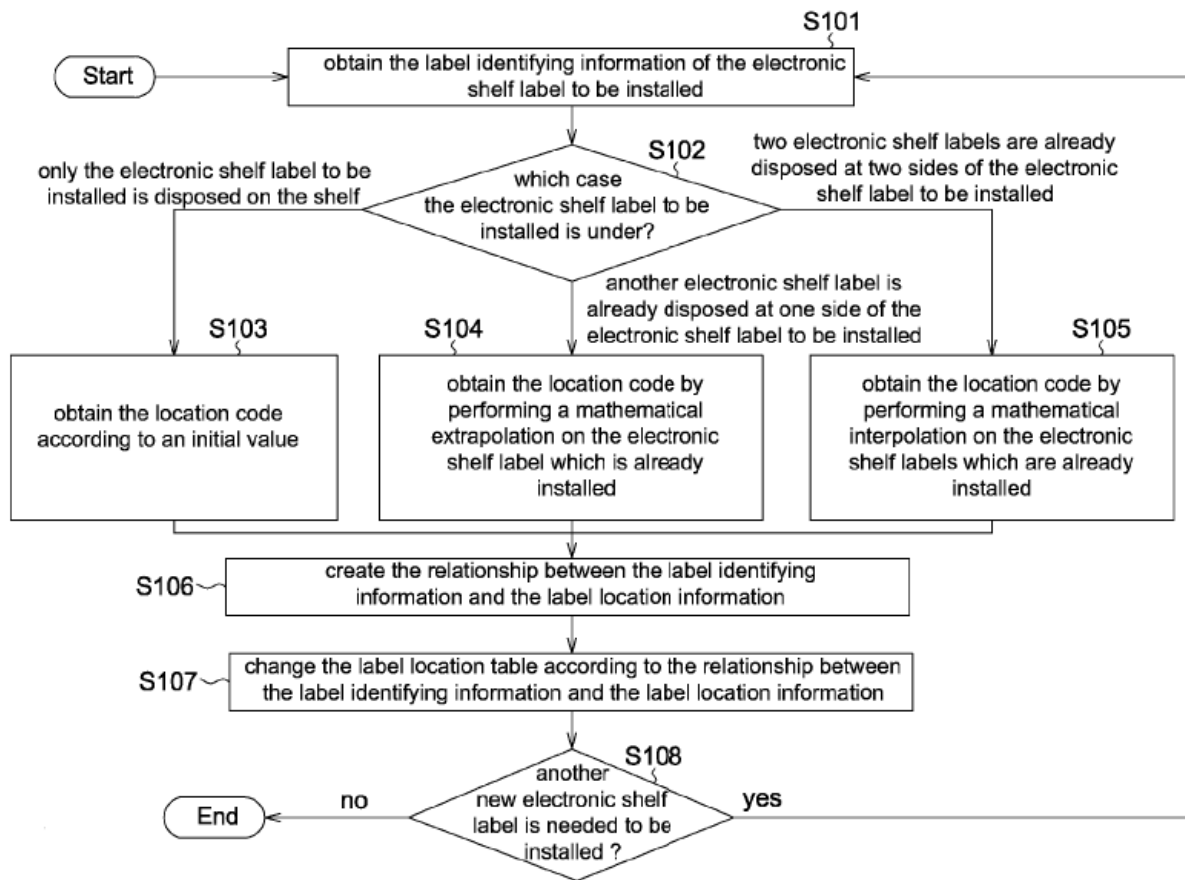
75. Wu discloses that a “deploying device. . . is used for reading the information of the shelf [] or the electronic shelf label.” Ex. 1003, [3:10-11].

76. Wu discloses that the deploying device “may be a smart phone, a tablet PC or a handheld device.” *Id.*, [3:11-13].

77. In my opinion, a POSITA would recognize that this deploying device is the claimed **reading device**.

78. Wu also discloses procedures for obtaining the new location information of an ESL that is added in a shelf based on the registered location information of an adjacent ESL. *See* Ex. 1003, [2:19-20], FIG. 2. This involves **acquiring, by the**

reading device, the **label identifier** for the ESL that is installed (the **added shelf label**). *Id.*, [3:59-61] (“the deploying device [] obtains the label identifying information of the electronic shelf label”); FIG. 2 (disclosing a first step of “obtaining the label identifying information of the electronic shelf label to be installed” (S101), and steps for identifying its location based on the location of installed ESLs (S104 and S105)).



Ex. 1003, FIG. 2.

79. In my opinion, element [1c] requires that the reading device “acquir[es]” a

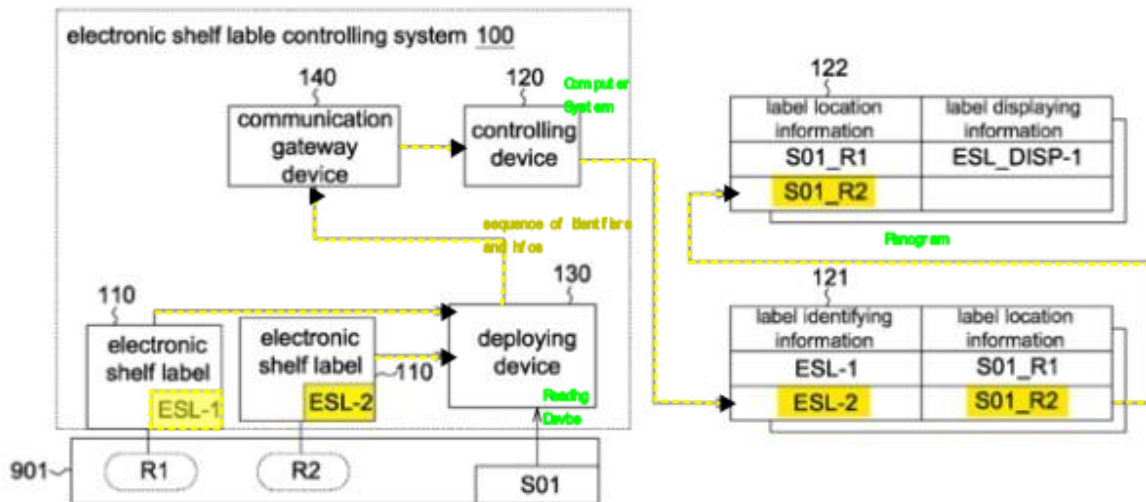
“sequence of label identifiers[,]” one being that of the added shelf label, and another being that of an adjacent shelf label that was already installed. Ex. 1001, [10:16-21]. The identifier of the added shelf label, as explained, is acquired by the reading device at step S101. Ex. 1003, [3:59-61] (“[i]n step S101, the deploying device [*i.e.*, reading device] obtains the label identifying information of the electronic shelf label [] to be installed”). Steps S103 to S106 can be completed by either the reading device (deploying device) or the computer system (controlling device). *Id.*, [3:36-42, 4:9-28, 4:38-43].

80. In my opinion, a POSITA would recognize that, in order for the reading device (deploying device) to complete steps S103-S106, the reading device (deploying device) **acquires** the location of **an adjacent shelf label** that was already installed.

81. In my opinion, a POSITA would understand that, without acquiring this second identifier in the sequence (which is explicitly shown in FIG. 3B of Wu), the reading device could not possibly “create[] the relationship between the label identifying information and the label location information[,]” by extrapolating from the ESL that is already installed as required by steps S104 and S106. Ex. 1003, [4:26-28].

82. FIG. 3B of Wu shows an example of the ESL controlling system in the case where there is already another electronic shelf label “disposed at one side of the

electronic shelf label 110 to be installed and there is no electronic shelf label disposed at another side of the electronic shelf label 110 to be installed[.]” *Id.*, [3:50-53]. Highlighted shelf label 2 is the added ESL, with label identifying information “ESL-2[.]” *Id.*, [4:55-59]. The figure illustrates data flow from ESL-1 (already installed in the same shelf) and ESL-2 (to be installed) to the reading device (controlling device 130).



Ex. 1003, FIG. 3B (annotated).

83. FIG. 3B shows two arrows flow from ESL-1 and ESL-2 to deploying device.

84. In my opinion, a POSITA would understand that this represents the **acquisition** of label identifiers of the adjacent label ESL-1 and of the added label ESL-2, which forms a **sequence of label identifiers**.

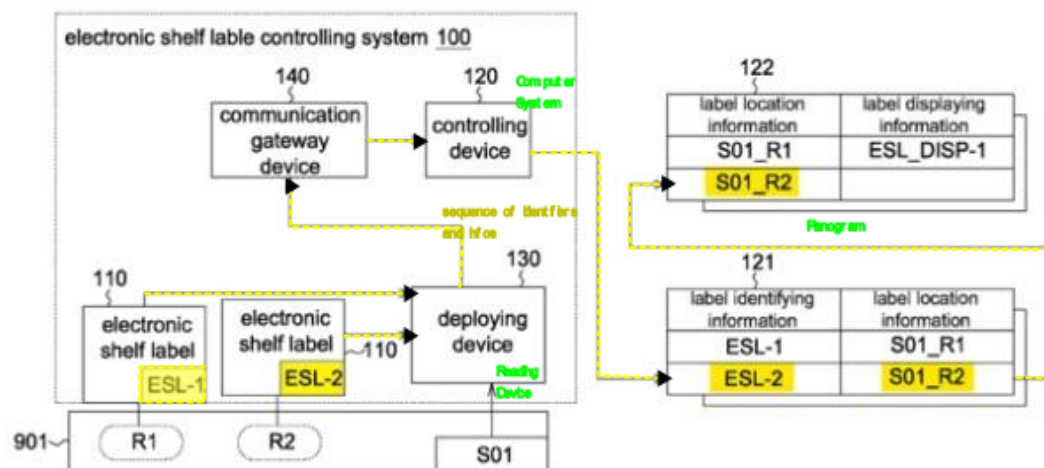
85. In my opinion, a POSITA would understand that the reading device that is equipped to read shelf label identifiers can be used to read the identifier of an adjacent shelf label in order to associate the added shelf label with a location in the

retail area.

86. Therefore, in my opinion, Wu discloses [1c] or at least renders [1c] obvious.

[1d]

87. Wu discloses two directions (left to right and right to left), defined by the horizontal nature of a retail shelf and the logic of obtaining a relative location. Ex. 1003, [5:5-11] (“[T]he location code of the electronic shelf label 110 to be installed can be obtained by performing a mathematical extrapolation, such as addition or multiplication on the electronic shelf label 110 which is already installed, such that the *location codes are incremented from left to right*. In other embodiment, the *location codes can be decremented from left to right*”); see also FIGs. 3B-C.



Ex. 1003, FIG. 3B (annotated).

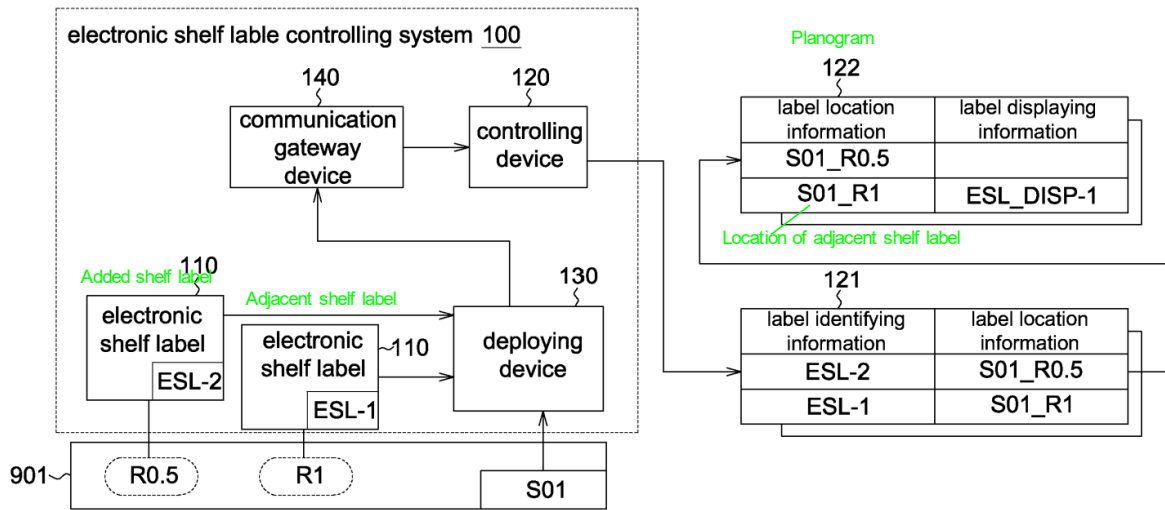
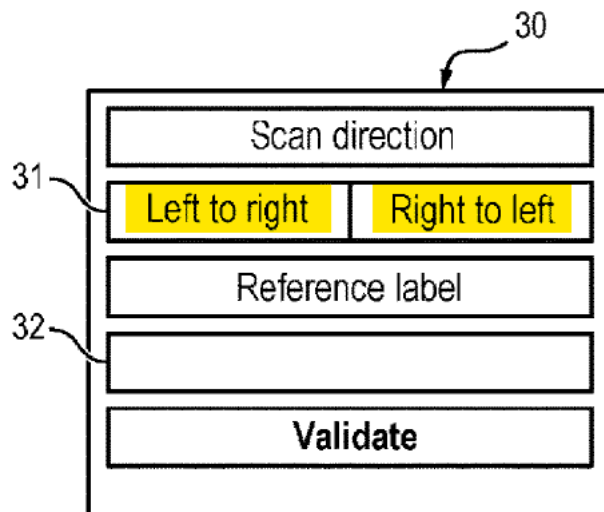


FIG. 3C

Ex. 1003, FIG. 3C (annotated).

88. In my opinion, a POSITA would recognize that these two directions teach the claimed **scrolling direction**. See also Ex. 1001, [6:37-39] (“In the example of FIG. 3 [below], this is the scrolling direction, by choosing a scan direction 31 in the menu 30: from left to right or from right to left”), FIG. 3.



Ex. 1001, FIG. 3 (annotated).

89. In FIG. 2 of Wu, S101 shows an initial step of obtaining the identifier of added ESL-2. FIG. 3B and FIG. 3C of Wu show the same system, with ESL-2 having been installed at the opposite side of the preexisting ESL in the same shelf. Ex. 1003, [4:53-55, 5:12-17].

90. In my opinion, a POSITA would recognize that the order of acquisition of identifiers, by the reading device (deploying device), is either left to right or right to left.

91. In my opinion, a POSITA would understand that the acquisition of the sequence of label identifiers in Wu is according to a scrolling direction of the locations of the retail area. Id.

92. In my opinion, Wu discloses [1d] or at least renders [1d] obvious.

[1e]

93. Wu discloses **a plurality of shelf labels distributed** in the business development of Wu. Ex. 1003, [3:55-56] (“...two electronic shelf labels are already disposed at two sides of the electronic shelf label [] to be installed...”); FIG. 3D (diagram showing a plurality of ESLs distributed in Wu’s business development), FIG. 5C (same).

94. In my opinion, this business development is the claimed **retail area**.

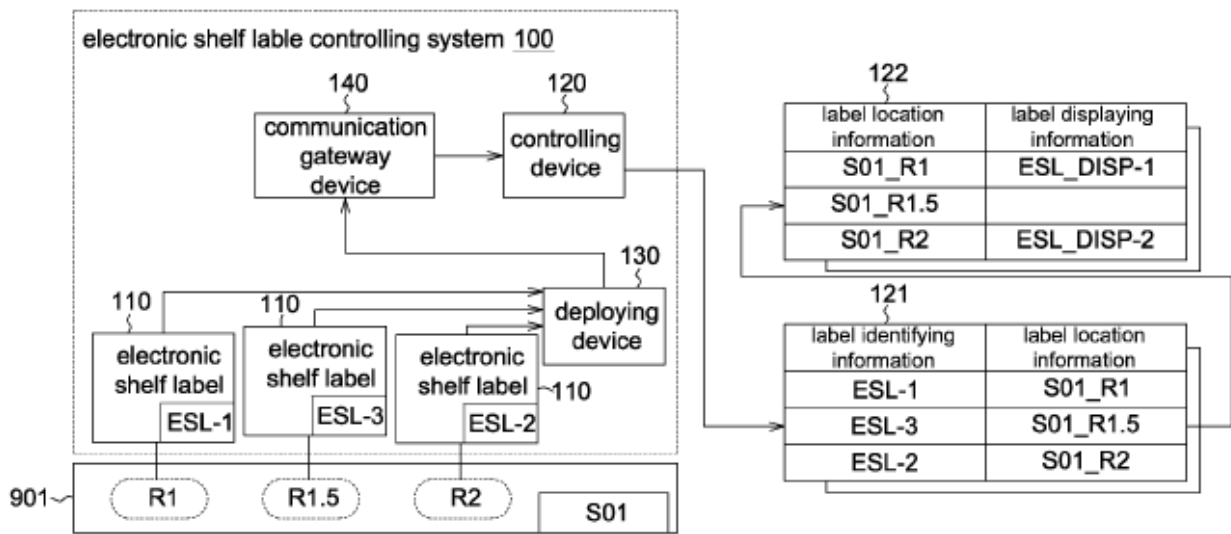
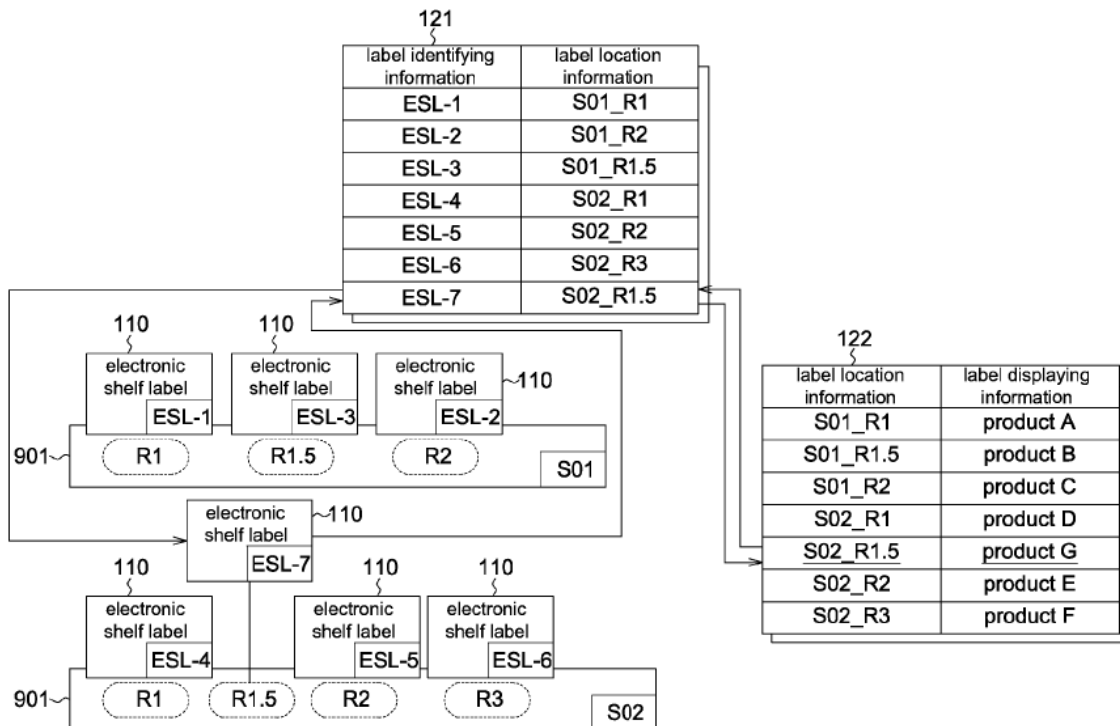


FIG. 3D

Ex. 1003, FIG. 3D.



Ex. 1003, FIG. 5C.

95. In my opinion, Wu discloses [1e] or at least renders [1e] obvious.

[1f]

96. Wu discloses that each shelf label is **associated with a respective article**.

Ex. 1003, [2:56-57] (“The electronic shelf label [] is disposed on a shelf [], for displaying varied product information...”).

97. In my opinion, a POSITA would find that such electronic shelf label is **disposed near a respective location associated with the article**.

98. In my opinion, a POSITA would understand to place traditional shelf labels besides the respective products with which they were associated, and electronic shelf labels are used in place of traditional shelf labels (see Ex. 1003, [1:30-33]).

99. In my opinion, Wu discloses [1f] or at least renders [1e] obvious.

[1g]

100. Wu discloses a reading device that “obtains the label identifying information of the electronic shelf label...” Ex. 1003, [3:59-61].

101. Wu discloses a “label location table [that] records a relationship between a label identifying information and a label location information...” *Id.*, [1:45-48].

102. In my opinion, a POSITA would recognize that this inherently discloses unique label identifiers associated with shelf labels (that is, each shelf label is **associated with a label identifier of its own**), because without such unique label identifiers, the processes disclosed by Wu would not work.

103. In my opinion, Wu discloses [1g] or at least renders [1g] obvious.

[1h]

104. As discussed, the adjacent shelf label is **either the preceding or following shelf label in the shelf according to the scrolling direction and in relation to the added shelf label.**

105. In my opinion, Wu discloses [1h] or at least renders [1h] obvious.

[1i]

106. Wu discloses locating a newly added ESL by determining its location by interpolation or extrapolation from the **preliminarily known location** of an adjacent ESL or adjacent ESLs. Ex. 1003, [4:20-25]. Wu further discloses that **a location of an adjacent shelf label is preliminarily known** for this purpose. Ex. 1003, [4:59-5:11]. FIG. 3C of Wu, reproduced and annotated below, shows that such location is preliminarily known in the **planogram**.

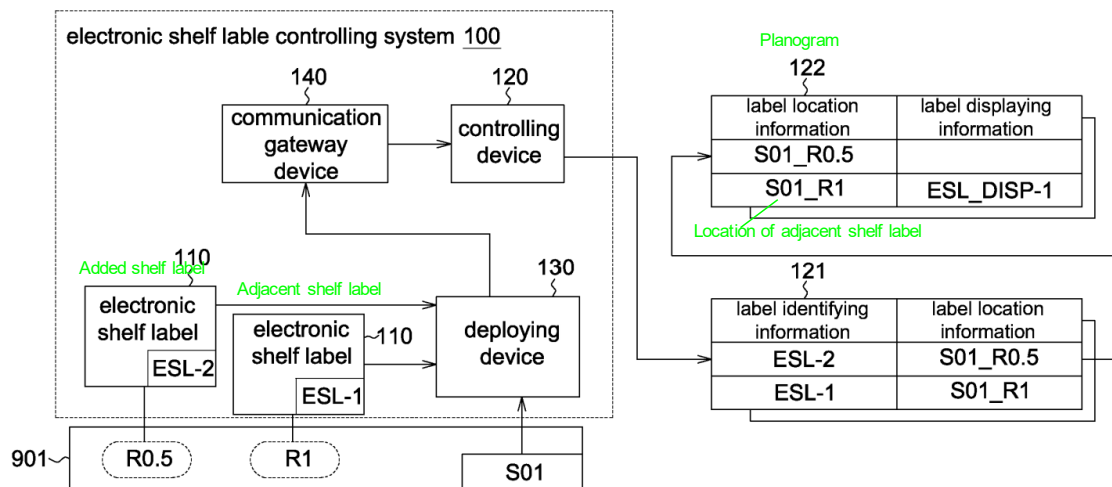


FIG. 3C

Ex. 1003, FIG. 3C (annotated)

107. In my opinion, Wu discloses [1i] or at least renders [1i] obvious.

[1j]

108. In my opinion, a POSITA would understand that the purpose of identifying a reference label in Wu is to **identify a location corresponding to the added ESL** in the retail area, so that a planogram can be updated. *See also* Ex. 1003, [4:15-17] (“In step S104, the location code [of the added ESL] is obtained by performing a mathematical extrapolation on the electronic shelf label which is already installed”), [4:20-22] (“In step S105, the location code [of the added ESL] is obtained by performing a mathematical interpolation on the electronic shelf labels which are already installed”); FIG. 2 (listing steps S104 and S105 of the method).

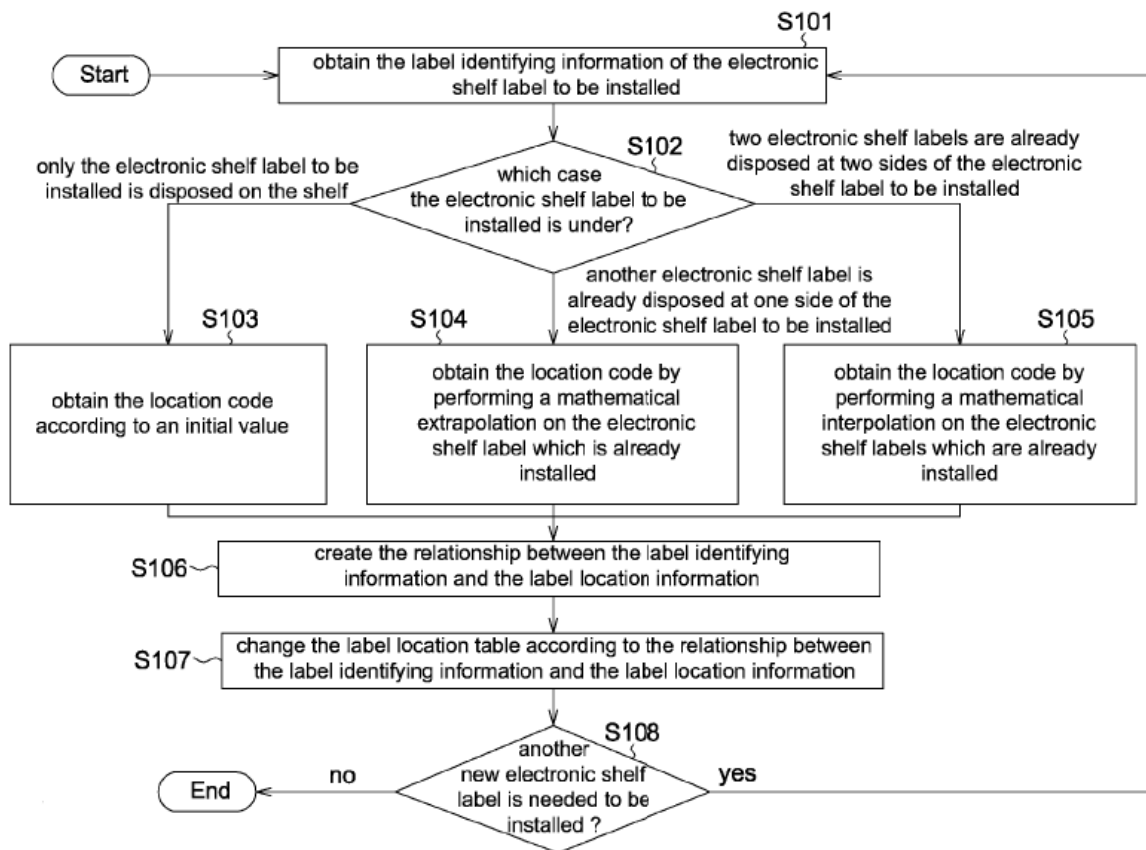
109. In my opinion, Wu discloses [1j] or at least renders [1j] obvious.

[1k]

110. Wu discloses **transmitting, by the reading device, the sequence of label identifiers to the computer system**. Ex. 1003, [3:6-7] (“The communication gateway device [] is used for transmitting varied information”); [3:10-11] (“The deploying device [] is used for reading the information of the ... electronic shelf label”); [3:13-15] (“The information read from the deploying device [] is transmitted to the controlling device”).

111. As explained, the reading device (deploying device) acquires a sequence of label identifiers, one being that of the added shelf label, and another being that of an adjacent shelf label that was already installed, to “create[] the relationship between the label identifying information and the label location information[,]” as

required by step S106 of FIG. 2 (below). Ex. 1003, [4:26-28]. The reading device (deploying device) then **transmits** this sequence of label identifiers to allow the **computer system** (controlling device) to “change[] the label location table [] according to the relationship between the label identifying information and the label location information.” *Id.*, [4:29-32] (S107 in FIG. 2, below).

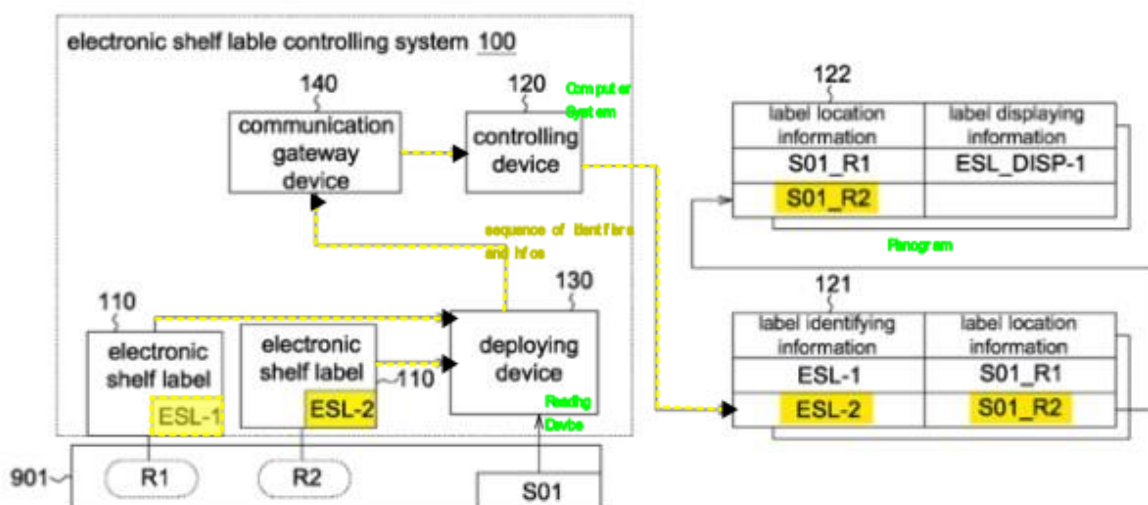


Ex. 1003, FIG. 2.

112. Wu’s FIG. 3B shows an example of the ESL controlling system in the case where there is already another electronic shelf label “disposed at one side of the electronic shelf label 110 to be installed and there is no electronic shelf label

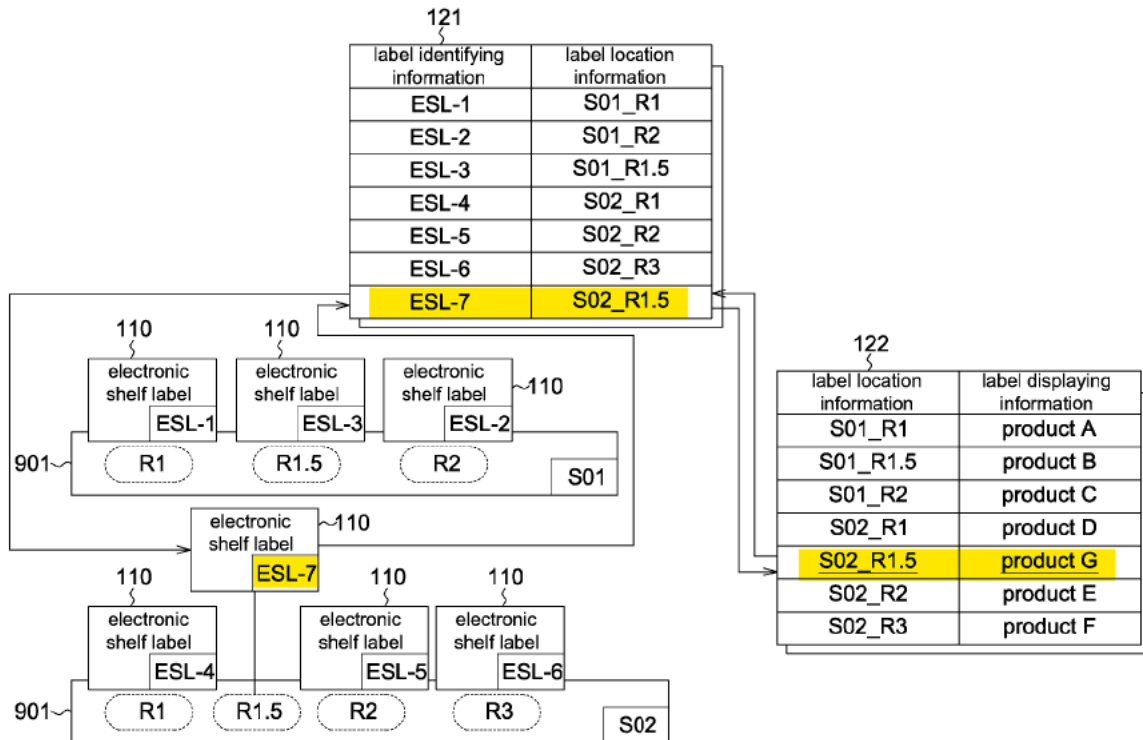
basis of the acquired sequence of label identifiers.

116. FIG. 3B of Wu shows an example of the information flow from ESL-1 and ESL-2 to the **reading device** (deploying device 130), with a merged information flow representing the claimed **sequence of label identifiers** flowing from the reading device to the **computer system** (controlling device 120) and ultimately into the **planogram** (label content table 122).



Ex. 1003, FIG. 3B (annotated).

117. In fact, Wu expressly discloses updating the label content table 122 (the planogram). Ex. 1003, [3:32-35], [6:14-18]. FIG. 5C illustrates that, when a new ESL is added in association with a new product, the label content table 122 can be updated to associate “product G” with added “ESL-7”.



Ex. 1003, FIG. 5C (annotated).

118. As FIG. 3B and associated disclosure of Wu teaches the data flow of **the sequence of label identifiers** into the **planogram** for the purposes of adding a new ESL, and FIG. 5C and associated disclosures of Wu expressly teaches the **updating** of the **planogram** for the newly added ESL, in my opinion, a POSITA would find it obvious to update the planogram **on the basis of** the sequence of label identifiers in the data flow of FIG. 3B.

119. Further, Wu discloses that a “manager can change the label content table [] by the controlling device.” Ex. 1003, [3:32-35].

120. In my opinion, a POSITA would find it obvious that the manager does so through computer programming instructions previously stored inside the

controlling device (a **computer system**).

121. In my opinion, a POSITA, familiar with computer systems in general and computer systems that manage information such as planograms in particular, would find it obvious that the computer system of Wu can be equipped with previously stored computer programming instructions that effect the updating as claimed in [11].

122. In my opinion, Wu discloses [11] or at least renders [11] obvious.

[1m]

123. Wu discloses that a “manager can change the label content table [] by the controlling device.” Ex. 1003, [3:32-35].

124. As discussed, in my opinion, a POSITA would find it obvious that the controlling device of Wu (the **computer system**) can update the planogram automatically without participation of human actors upon the receipt of the sequence of label identifiers.

125. As explained, an objective of Wu is to update an association of labels and articles to reflect the addition of an ESL to the shelf of a retail area.

126. As it is an expressly disclosed objective of Wu to associate articles with locations in a label content table (see Ex. 1003, [3:16-31]), a POSITA, in my opinion, would understand that the computer system, in order to update the planogram automatically (which inherently updates the association of articles and locations in the planogram), necessarily “determin[es]” articles associated with the

labels of the sequence of label identifiers in order to carry out such updating.

127. In my opinion, Wu discloses [1m] or at least renders [1m] obvious.

[1n]

128. As discussed, Wu discloses that the computer system **determines** the **locations of the articles**, for example by mathematical interpolation and extrapolation. Ex. 1003, [4:9-25].

129. As noted, the planogram (label content table 122) stores product and location information, and can be updated based on an association of label identifiers and locations.

130. In my opinion, a POSITA would find it obvious that, for such update to work, the locations would necessarily be **determined on the basis of the obtained location** of the added ESL (*see* Ex. 1003, [3:16-21]).

131. In my opinion, Wu discloses [1n] or at least renders [1n] obvious.

[1o]

132. Wu discloses **the obtained location is a location in the planogram which is adjacent to the preliminarily known location of the adjacent shelf label** because the location of the added ESL in the planogram is adjacent to the preliminarily known location of the adjacent ESL. *See* Ex. 1003, FIG. 3C.

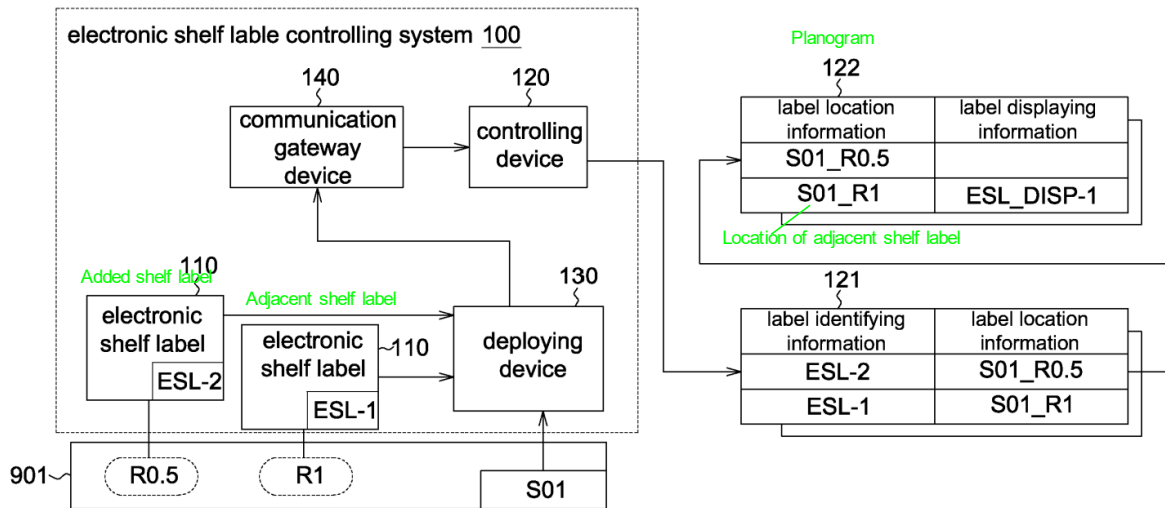


FIG. 3C

Ex. 1003, FIG. 3C (annotated).

133. In my opinion, Wu discloses [1o] or at least renders [1o] obvious.

134. In my opinion, a POSITA would find Claim 1 obvious over Wu.

Claim 2

[2a]

135. In my opinion, the method of claim 1 is rendered obvious by Wu.

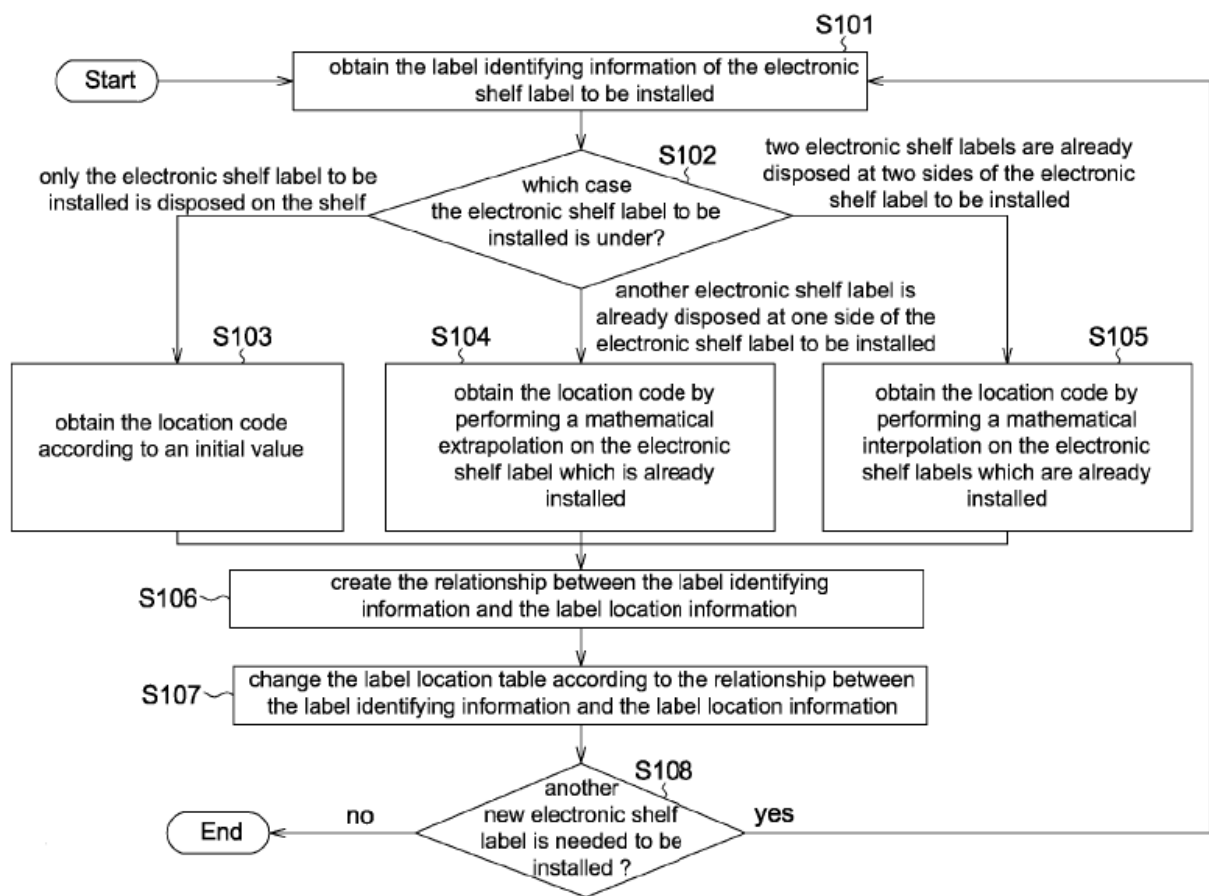
[2b]

136. In my opinion, this dependent claim adds the limitation that a reading device must acquire an indication of relative positioning and transmit it to the computer system.

137. Referring to FIG. 2, Wu discloses that “steps S103 to S106 can be performed by the deploying device.” Ex. 1003, [4:42-43]. Thus, the deploying device (reading

device) of Wu can “create[] the relationship between the label identifying information and the label location information[.]”*Id.*, [4:26-28]; *see also id.*, FIG. 2 (S106).

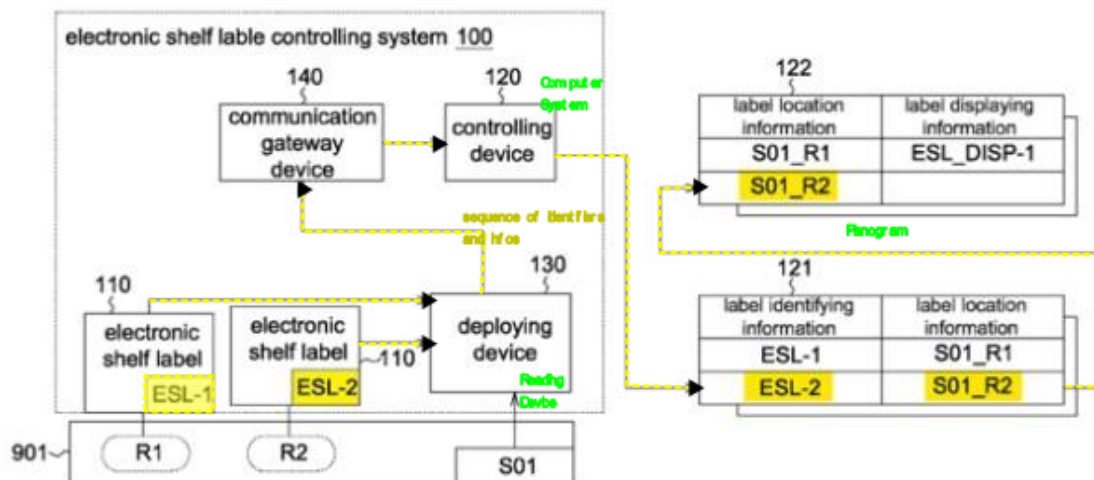
138. In my opinion, a POSITA would understand that this relationship includes **an indication of relative positioning**, and is transmitted to the controlling device for updating the planogram. *See* Ex. 1003, FIG. 2 (S107).



Ex. 1003, FIG. 2.

139. In my opinion, a POSITA would understand that, to distinguish between the situations illustrated by FIG. 3B and that illustrated by FIG. 3C, an indication

relative positioning is acquired by the reading device and transmitted to the central server.



Ex. 1003, FIG. 3B (annotated).

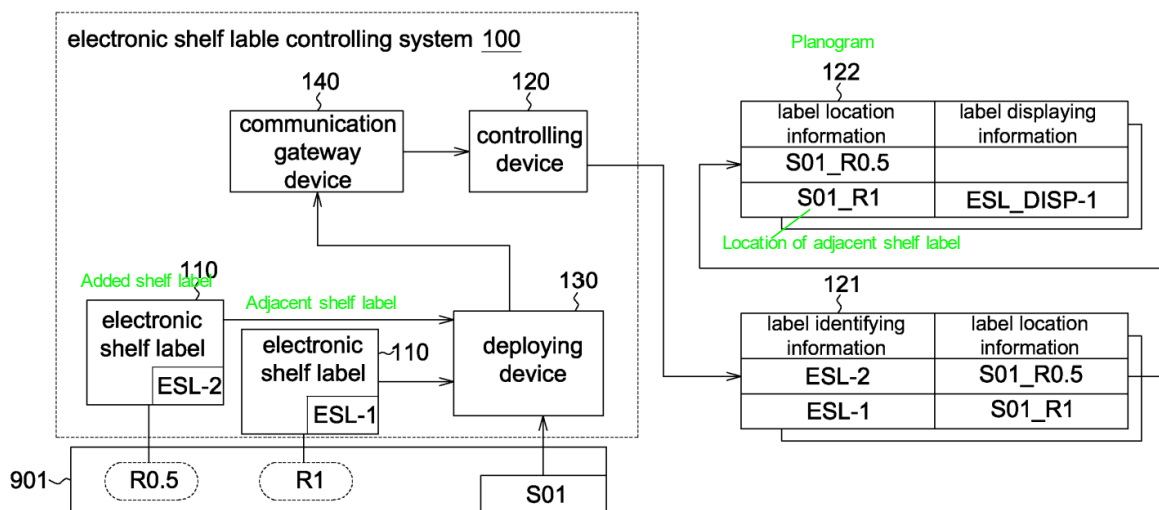


FIG. 3C

Ex. 1003, FIG. 3C (annotated).

140. In my opinion, a POSITA would find [2b], and therefore Claim 2, obvious

over Wu.

Claim 3

[3a]

141. In my opinion, the method of claim 2 is rendered obvious by Wu.

[3b]

142. As explained, Wu discloses a sequential acquisition of label identifiers.

143. In my opinion, a POSITA would understand that receiving an indication of relative positioning comprises identifying relative positioning from the acquisition order of label identifiers.

144. In my opinion, a POSITA would find [3b], and thus Claim 3, obvious over Wu.

Claim 4

[4a]

145. In my opinion, the method of claim 1 is rendered obvious by Wu.

[4b]

146. Wu discloses a reading device that “may be a smart phone [or] a tablet PC[.]” Ex. 1003, [3:11-13]. As explained, this device is capable of “transmitting varied information” to the computer system. *Id.*, [3:6-15]. Also discussed, Wu discloses unique label identifiers and associated article references.

147. In my opinion, a POSITA would thus realize that inputting product information by the reading device was not only possible, but might have simplified

planogram updating by removing a step of assigning product and label identifier associations by the central server.

148. In my opinion, a POSITA would thus be motivated to utilize well-known functions of a smartphone or tablet PC (*e.g.*, a keyboard or camera) to acquire product identifiers to associate with the shelf label identifiers acquired by the reading device (as discussed), thus simplifying the process and achieving Wu's expressly disclosed objective of an electronic shelf label updating method (Ex. 1003, [Abstract]).

149. In my opinion, a POSITA would have a reasonable expectation of success in doing so because this represents combining well-known, conventional elements that each did no more than they would in separate operations, and would yield no more than what one would expect from such a combination. With such an obvious modification, the reading device of Wu would then transmit to the central server the association data between the label identifier and a **reference of the article** (the product identifier) as claimed in [4].

150. In my opinion, a POSITA would find claim 4 obvious over Wu.

Claim 5

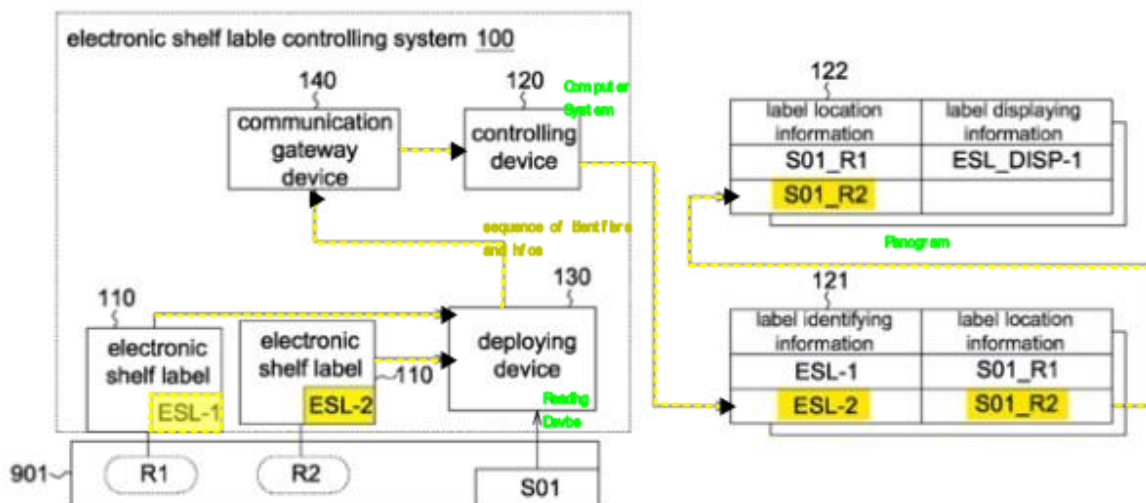
[5a]

151. In my opinion, the method of claim 1 is rendered obvious by Wu.

[5b]

152. Wu discloses that the added shelf label is an **electronic shelf label**. Ex. 1003,

[4:9-11]. Wu discloses that the added shelf label is **one of a plurality of electronic shelf labels to be located, the electronic shelf labels to be located being adjacent to each other in the scrolling direction of the locations of the retail area** through its disclosure of locating two adjacent electronic shelf labels (including the added one) during the addition of the label. Ex. 1003, FIG. 3B; *see also* my discussions for limitation [1c].



Ex. 1003, FIG. 3B (annotated).

[5c]

153. Wu discloses **acquiring the label identifiers of the plurality of electronic shelf labels to be located in the order of their arrangement** through the disclosure of acquiring the two adjacent labels, in left-to-right or right-to-left order. Ex. 1003, [5:5-11]; *see also* my discussions for limitation [1d] above. In my opinion, either of these is an order of arrangement. Ex. 1009.

154. Therefore, in my opinion, Wu discloses claim 5 or at least renders it obvious.

Claim 10

155. In my opinion, claim 10 recites a non-transitory computer program product analogous to method claim 1, and is rendered obvious by Wu for same reasons set forth for claim 1.

[10a]

156. In my opinion, the limitations of [10a] are substantially the same as the corresponding limitations of [1a].

[10b]

157. In my opinion, the limitations of [10b] are substantially the same as the corresponding limitations of [1c].

[10c]

158. In my opinion, the limitations of [10c] are substantially the same as the corresponding limitations of [1d].

[10d]

159. In my opinion, the limitations of [10d] are substantially the same as the corresponding limitations of [1e].

[10e]

160. In my opinion, the limitations of [10e] are substantially the same as the corresponding limitations of [1f].

[10f]

161. In my opinion, the limitations of [10f] are substantially the same as the

corresponding limitations of [1g].

[10g]

162. In my opinion, the limitations of [10g] are substantially the same as the corresponding limitations of [1h].

[10h]

163. In my opinion, the limitations of [10h] are substantially the same as the corresponding limitations of [1i].

[10i]

164. In my opinion, the limitations of [10i] are substantially the same as the corresponding limitations of [1j].

[10j]

165. In my opinion, the limitations of [10j] are substantially the same as the corresponding limitations of [1k].

[10k]

166. In my opinion, the limitations of [10k] are substantially the same as the corresponding limitations of [1l].

[10l]

167. In my opinion, the limitations of [10l] are substantially the same as the corresponding limitations of [1m].

[10m]

168. In my opinion, the limitations of [10m] are substantially the same as the

corresponding limitations of [1n].

[10n]

169. In my opinion, the limitations of [10n] are substantially the same as the corresponding limitations of [1o].

Claim 11

170. In my opinion, claim 11 recites a system analogous to method claim 4, and is rendered obvious by Wu for same reasons set forth for claims 1 and 4.

[11a]

171. In my opinion, the limitations of [11a] are substantially the same as the corresponding limitations of [1a].

[11b]

172. In my opinion, the limitations of [11b] are substantially the same as the corresponding limitations of [1b].

[11c]

173. In my opinion, the limitations of [11c] are substantially the same as the corresponding limitations of [1e]. For the limitation of “a plurality of electronic shelf labels”, Wu discloses that, please refer to my discussions for limitation [5b] above.

[11d]

174. In my opinion, the limitations of [11d] are substantially the same as the corresponding limitations of [1g].

[11e]

175. In my opinion, the limitations of [11e] are substantially the same as the corresponding limitations of [1c].

[11f]

176. In my opinion, the limitations of [11f] are substantially the same as the corresponding limitations of [1m] and [4b].

[11g]

177. In my opinion, the limitations of [11g] are substantially the same as the corresponding limitations of [1a].

[11h]

178. In my opinion, the limitations of [11h] are substantially the same as the corresponding limitations of [1k].

[11i]

179. In my opinion, the limitations of [11i] are substantially the same as the corresponding limitations of [1j], [1l] and [1n].

[11j]

180. In my opinion, the limitations of [11j] are substantially the same as the corresponding limitations of [1o].

[11k]

181. In my opinion, the limitations of [11k] are substantially the same as the corresponding limitations of [1c].

[11l]

182. In my opinion, the limitations of [11l] are substantially the same as the corresponding limitations of [1d].

[11m]

183. In my opinion, the limitations of [11m] are substantially the same as the corresponding limitations of [1h].

[11n]

184. In my opinion, the limitations of [11n] are substantially the same as the corresponding limitations of [1i].

[11o]

185. In my opinion, the limitations of [11o] are substantially the same as the corresponding limitations of [1k].

Claim 12

[12a]

186. In my opinion, the system of claim 11 is rendered obvious by Wu.

[12b]

187. In my opinion, the limitations of [12b] are substantially the same as the corresponding limitations of [2b] and Claim 12 is rendered obvious by Wu for the same reasons.

Claim 13

[13a]

188. In my opinion, the system of claim 12 is rendered obvious by Wu.

[13b]

189. In my opinion, the limitations of [13b] are substantially the same as the corresponding limitations of [3b] and Claim 13 is rendered obvious by Wu for the same reasons.

Claim 14

[14a]

190. In my opinion, the system of claim 11 is rendered obvious by Wu.

[14b]

191. In my opinion, the limitations of [14b] are substantially the same as the corresponding limitations of [4b] and Claim 14 is rendered obvious by Wu for the same reasons.

Claim 15

[15a]

192. In my opinion, the system of claim 11 is rendered obvious by Wu.

[15b]

193. In my opinion, the limitations of [15b] are substantially the same as the corresponding limitations of [5b].

[15c]

194. In my opinion, the limitations of [15c] are substantially the same as the corresponding limitations of [5c] and Claim 15 is rendered obvious by Wu for the

same reasons.

Claim 20

[20a]

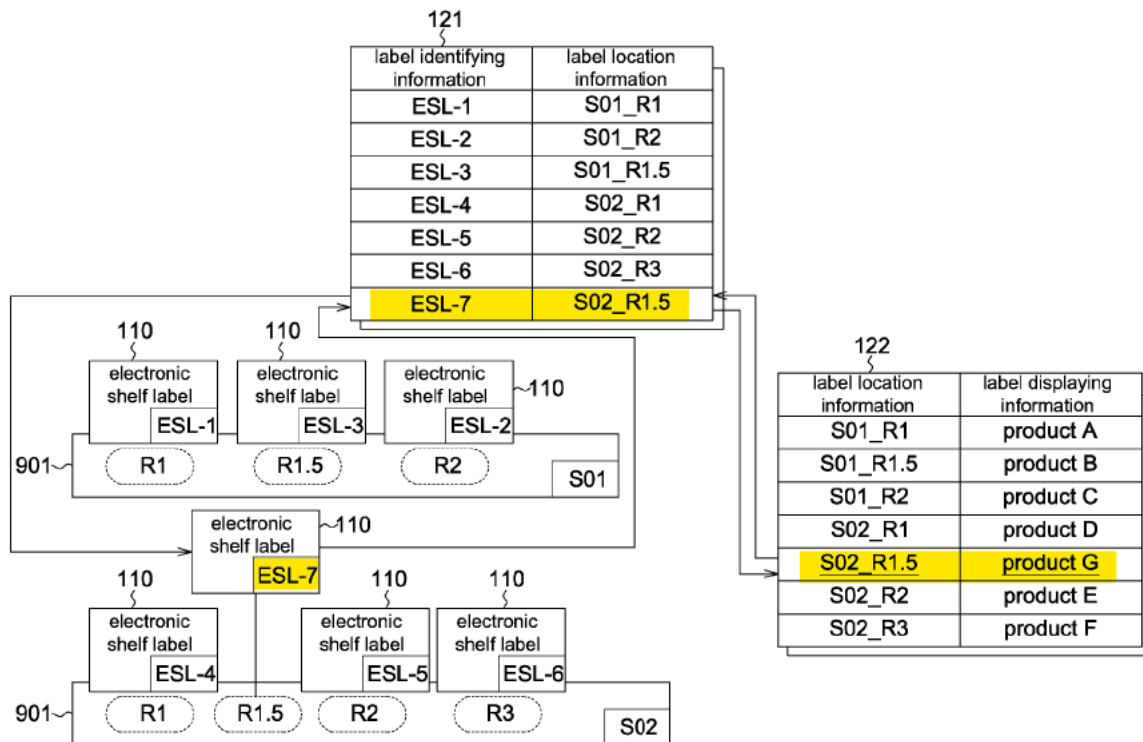
195. In my opinion, the system of claim 11 is rendered obvious by Wu.

[20b]

196. In my opinion, the limitations of [20b] are substantially the same as the corresponding limitations of [11]-[1n] and Claim 20 is rendered obvious by Wu for the same reasons.

Motivation to Combine Wu's Various Embodiments

197. The disclosures from Wu that disclose or render Claims 1-5, 10, 11-15, and 20 of the '709 Patent obvious, in my opinion, are generally from the part of Wu relating to the steps of the electronic shelf label installing method as illustrated in FIGs. 2 and 3 of Wu. As Wu itself describes, all of these steps belong to the one embodiment of an electronic shelf label installing method. Ex. 1003, [1:53-62]. To the extent that the disclosures of Wu relating to the steps of the electronic shelf updating method as illustrated in FIGs. 4 and 5 of Wu are drawn upon, as discussed above for this Ground, these disclosures fall into three topics: a disclosure of a relatively large number of ESLs present in the planogram, as well as a disclosure of product names being registered in the planogram, and updating of these information, and all three topics are representatively illustrated by FIG. 5C.



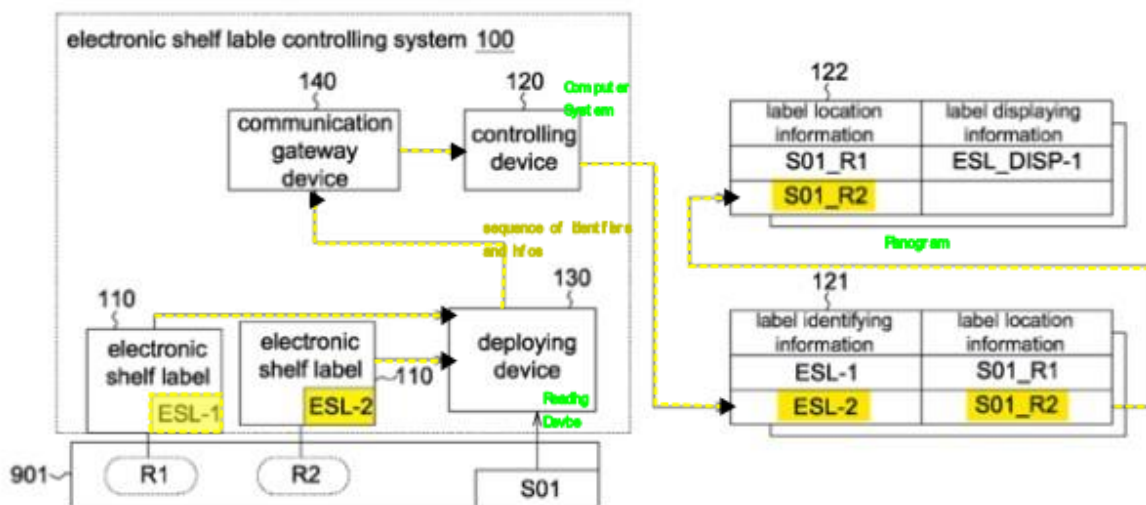
Ex. 1003 (Wu), FIG. 5C.

198. In my opinion, a POSITA would consider that the disclosures of electronic shelf updating method in Wu to pertain to the same embodiment as the disclosures of electronic shelf installing method, because both these methods involve the exactly same components of Wu's electronic shelf label controlling system and are naturally complementary methods both serving the purpose of using electronic shelf labels instead of the conventional shelf labels (*See* Ex. 1003, [1:30-33]). In fact, the disclosures of both methods specifically teach steps for adding a new ESL (*See* Ex. 1003, [4:9-12], [6:31-35]), and these steps are complementary to each other. Ex. 1009. Therefore, in my opinion, a POSITA would not consider these to

be different embodiments, and would require no motivation to combine them.

199. However, to the extent that the Board considers these two methods pertain to different embodiments, in my opinion, a POSITA would have been motivated and able to implement and update a planogram such as the one disclosed in FIG. 5C in the embodiment of an electronic shelf label installing method.

200. Wu already discloses a label content table (the **planogram**) that “records the label location information and a label displaying information of the electronic shelf label 110.” Ex. 1003, [3:20-21]. Wu further uses this table in the embodiment of electronic shelf label installing method, where it is shown as the final destination of the data flow carrying the sequence of label identifiers.



Ex. 1003 (Wu), FIG. 3B (annotated)

201. Further, as is illustrated in FIG. 3B, the planogram used in that embodiment already contains a plurality of ESLs and further already contains displaying information (the “ESL_DISP-1”). The structure of the planogram in FIG. 5C is

exactly the same, except that FIG. 5C shows more ESLs and shows a more human-readable displaying information (such as the product name “Product A”).

202. Thus, in my opinion, a POSITA would be motivated to implement the planogram in the embodiment as illustrated by FIG. 3B in the way depicted in FIG. 5C, that is, allowing the planogram to support a large number of ESLs and to show more human-readable displaying information (such as product names), so as to realize the universal and expressly disclosed objective of Wu to “inform[] the consumers the name, the price or the promotion of the products” for “varied products” (Ex. 1003, [1:21-25]). In my opinion, a POSITA would realize that this does not require *any* change to the structure of the planogram disclosed in the embodiment as illustrated by FIG. 3B, as the planogram there already supports multiple ESLs and string-based displaying information. Ex. 1009. Thus, it is my opinion that such a change, if it is a change at all, is well within the skills of the POSITA, and the POSITA would have a reasonable likelihood of success in implementing it.

203. Further, in my opinion, a POSITA would be motivated to update the planogram in the embodiment as illustrated by FIG. 3B in view of Wu’s disclosures pertaining to FIG. 5C. Wu already shows the flow of the sequence of label identifiers into the planogram. Ex. 1003, FIG. 3B. Wu further expressly discloses the **updating** of label location table 121, a closely associated table with the planogram that also appears in exactly the same relationship to the planogram in

FIG. 5C, during this data flow, on the basis of the sequence of label identifiers. Ex. 1003, [4:29-32], [4:53-5:11]. Wu then discloses the updating of the planogram in the disclosures pertaining to FIG. 5C and to all of Wu's embodiments in general. Ex. 1003, [3:32-35], [6:14-18]. Further, the disclosures pertaining to FIG. 5C are also related to the addition of a new ESL. Ex. 1003, [8:7-11]. In my opinion, a POSITA would realize that updating the planogram in the same step as updating label location table 121, instead of in a separate procedure, would simplify the design of the controlling device (the **computer system**) by merging naturally complementary steps into a single step, and avoid possible errors from mis-synchronization of the data updates in the two steps. Ex. 1009. Thus it is my opinion that a POSITA would be motivated to combine the updating of planogram disclosed by FIG. 5C into the data flow disclosed by FIG. 3B to realize such advantages and achieve the expressly disclosed objective of Wu to electronic shelf labels instead of the conventional shelf labels (*See* Ex. 1003, [1:30-33]). Not only would this have been obvious to try, it would also have yielded no more than predictable results due to the combination of familiar elements in a known way. In my opinion, such a modification would well have been within the skills of a POSITA.

204. Therefore, in my opinion, a POSITA would have been motivated and able to combine the different embodiments of Wu and find claims 1-5, 10, 11-15, 20 obvious over such a combination.

Ground 2: Claims 1-6, 10, 11-16, 20 are Rendered Obvious by Wu in Combination with Chaves

205. In my opinion, claims 1-5, 10, 11-15, 20 are disclosed or rendered obvious by Wu.

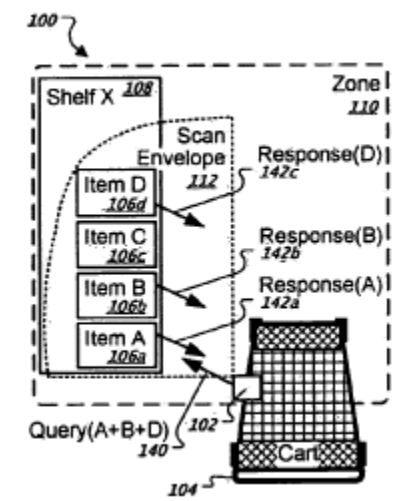
206. In my opinion, the same claims are additionally disclosed or rendered obvious by Wu in combination with Chaves because Chaves also makes explicit disclosures of certain limitations of these claims, and a POSITA would have been motivated and able to combine these disclosures by Chaves into Wu.

207. In addition, in my opinion, a POSITA would have been further motivated and able to combine the disclosures of Chaves related to the limitations of claims 6 and 16 into Wu, thus rendering claims 6 and 16 also obvious over the combination of Wu and Chaves (Wu-Chaves).

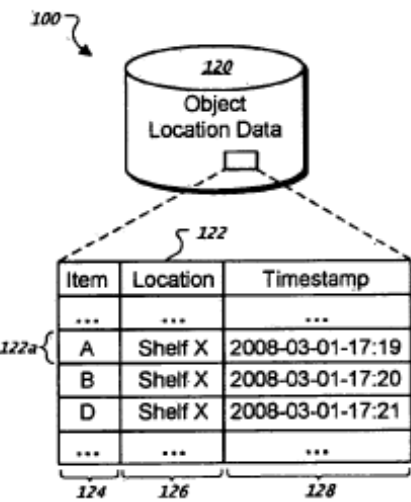
Overview of Chaves

208. Chaves discloses a mobile RFID reader for use in the retail context. Ex. 1006, [0018], [0019]. Chaves also discloses using the RFID reader to acquire a sequence of tag IDs, *id.*, [0040] (discussing a process by which the reader may “read the RFID tags for item A [], B [] and D []” “stored on the shelf ‘X’” in a “department of a store”), and transmitting the sequence along with “updated object location data” to an Enterprise Resource Planning (ERP) System. *Id.*, [0042]. An object of the disclosed system is “to determine which items or products are expected at a given location,” *id.*, [0003], and to simplify “planogram compliance.”

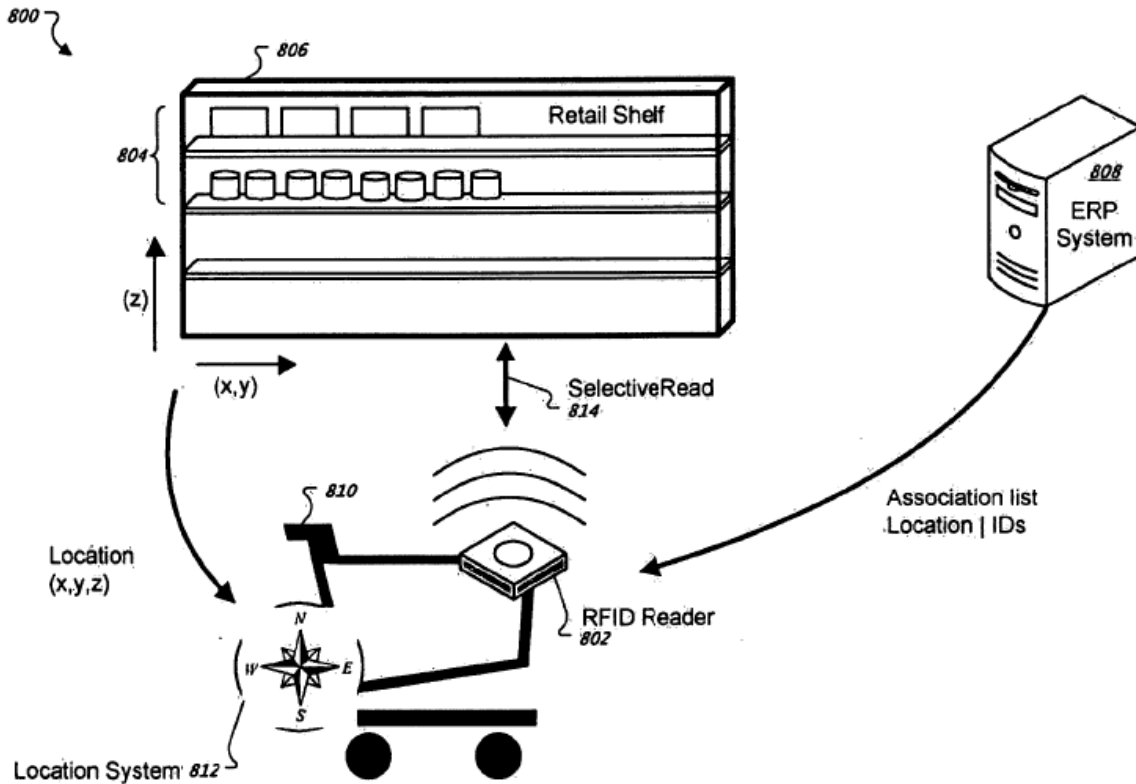
Id., [0020].



Ex. 1006 (Chaves), FIG. 1C.



Ex. 1006 (Chaves), FIG. 1D.



Ex. 1006 (Chaves), FIG. 8.

209. In my opinion, Chaves is analogous prior art to the '709 Patent. The '709 Patent is directed to methods and systems for updating a planogram including association data between articles and locations of such articles (Ex. 1001, [2:45-50, 3:65-68, 10:11-15]) while Chaves is directed to “performing a high-level query at an enterprise resource system, for example to determine which items or products are expected at a given location” (Ex. 1006, [0003]). Thus, both the '709 Patent and the Chaves are in the same field of endeavor for computer information systems associating articles/items/products with locations of such articles/items/products.

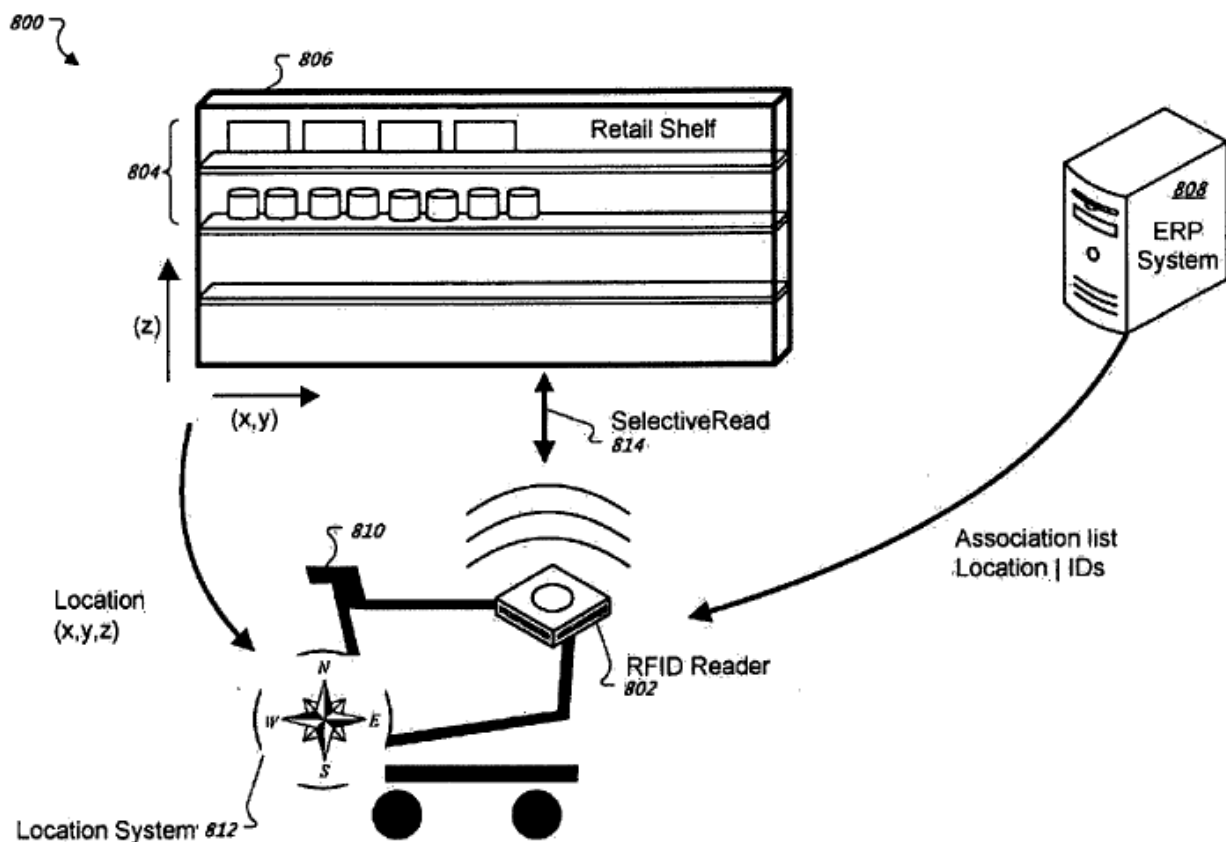
Claims 1-5, 10, 11-15, 20

210. It is my opinion that Chaves explicitly discloses the following limitations of claims 1-5, 10, 11-15, 20.

“retail area”

211. Chaves specifies that its system is intended for the “retail environment, such as a grocery store or discount store[.]” Ex. 1006. [0020]. This is an explicit disclosure of the claimed **retail area** (e.g., by [1a]).

212. Further, FIG. 8 of Chaves shows a “retail shelf.” This is another explicit disclosure of the claimed **retail area** (e.g., by [1a]).



Ex. 1006 (Chaves), FIG. 8.

“acquiring, by a reading device, a sequence of label identifiers”

213. Chaves discloses a “mobile reader” that can scan RFIDs of a sequence of items. Ex. 1006, [0036], [0037], [0040] (discussing a process by which the reader may “read the RFID tags for item A [], B [] and D []” “stored on the shelf ‘X’” in a “department of a store”). In my opinion, a POSITA would find this to be an explicit disclosure of a **reading device** that can **acquire a sequence of label identifiers** (as claimed by e.g. [1c]).

“transmitting, by the reading device, the sequence of label identifiers to the computer system”

214. Chaves discloses this limitation (as claimed by e.g. [1k]) through the disclosures that “object location data [] may be transmitted to the ERP system” (Ex. 1006, [0042]), that “exemplary object location data. . . may identify the locations of items, such as products on shelves within a store” (*Id.*, [0037]) and that “[t]he object location data [] may include multiple entries. . . that include location information for items” and “an item identifier.” (*Id.*, [0038]). FIG. 1B of Chaves depicts this data in tabular form. In my opinion, a POSITA would find it obvious that this object location data, with multiple entries, comprises a sequence of label identifiers.

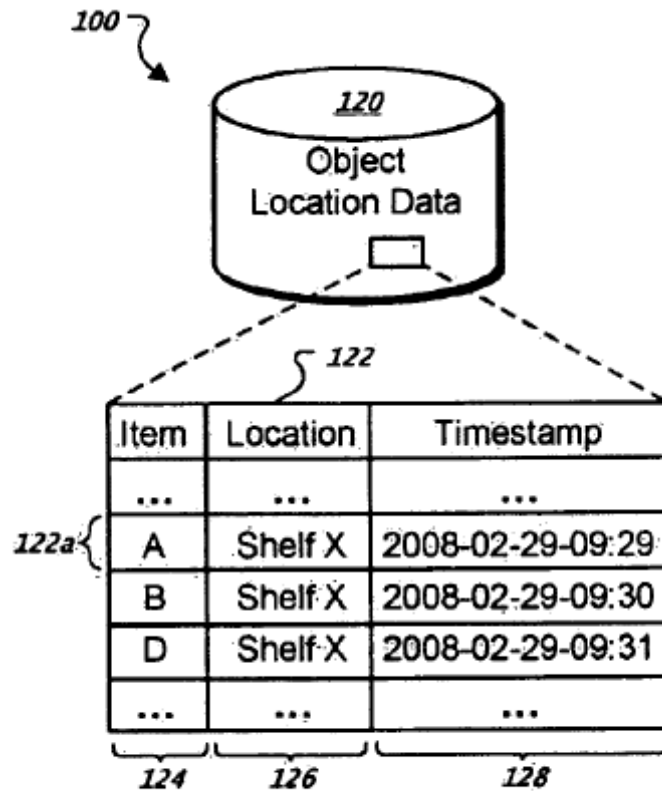


FIG. 1B

Ex. 1006 (Chaves), FIG. 1B.

215. Chaves discloses that this information may be sent “in packets.” Ex. 1006., [0042]. Thus the sequence of the label identifiers is **transmitted** to the computer system. This provides an explicit disclosure of transmitting a sequence as claimed by e.g. [1k]. The following annotated FIG. 5 of Chaves shows the **transmission** of such sequence from mobile reader 502 (**reading device**) to EPR System 504 (**computer system**).

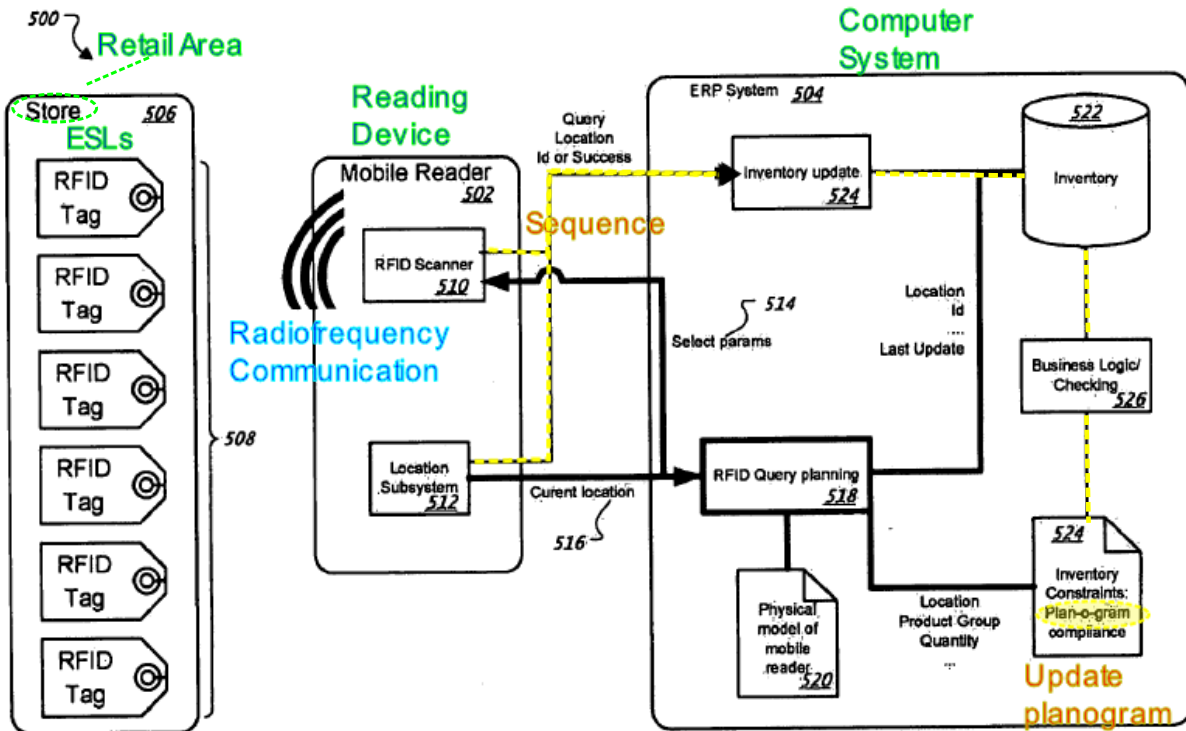


FIG. 5

Ex. 1006 (Chaves), FIG. 5 (annotated).

“transmitting. . . a reference of an article with which the added shelf label is associated with”

216. Chaves discloses transmitting object location data which represents an association of location of items and item identifier, as discussed above. FIG. 1B of Chaves, annotated below, shows **a reference of an article** for each item included in the object location data.

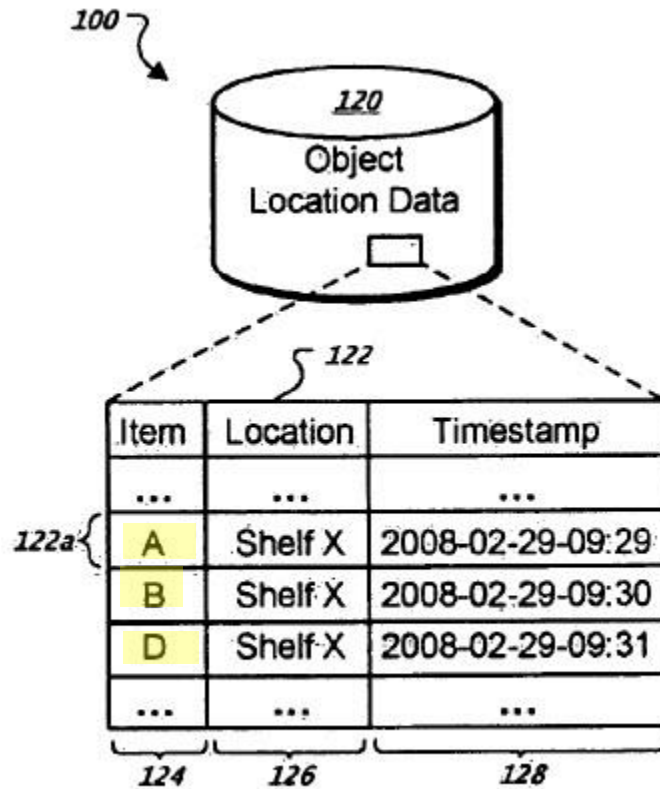


FIG. 1B

Ex. 1006 (Chaves), FIG. 1B (annotated).

217. As discussed above, Chaves transmits this data. Thus Chaves provides an explicit disclosure of this limitation.

Claims 6 and 16

Claim 6

[6a]

218. It is my opinion that the method of claim 1 is disclosed or rendered obvious by Wu.

[6b]

219. Chaves discloses “**a radiofrequency peripheral.**” Ex. 1006, [0002] (“Radio

Frequency Identification (RFID) technology is used as an automatic identification method”), [0003] (discussing “an RFID device”). As to be discussed in the motivation to combine part for this ground, it is my opinion that a POSITA would have been motivated and able to **fit the electronic shelf labels** of Wu (e.g. Ex. 1003, [Abstract]) with Chaves’s RFIDs.

[6c]

220. Chaves discloses the limitations of [6c] through its disclosure of the reading device reading the RFID tags. Ex. 1006, [0002] (noting RFID technology in Background section), [0003] (discussing “an RFID device”), [0040] (“reader may ... read the RFID tags”), FIG. 5. In my opinion, a POSITA would have known that the reading of an RFID tag is **acquiring the identifier** of the tag (fitted into the ESL of Wu, please refer to my discussions for [6b] above) **by setting up communication via radiofrequency with the electronic shelf labels and the reading device**.

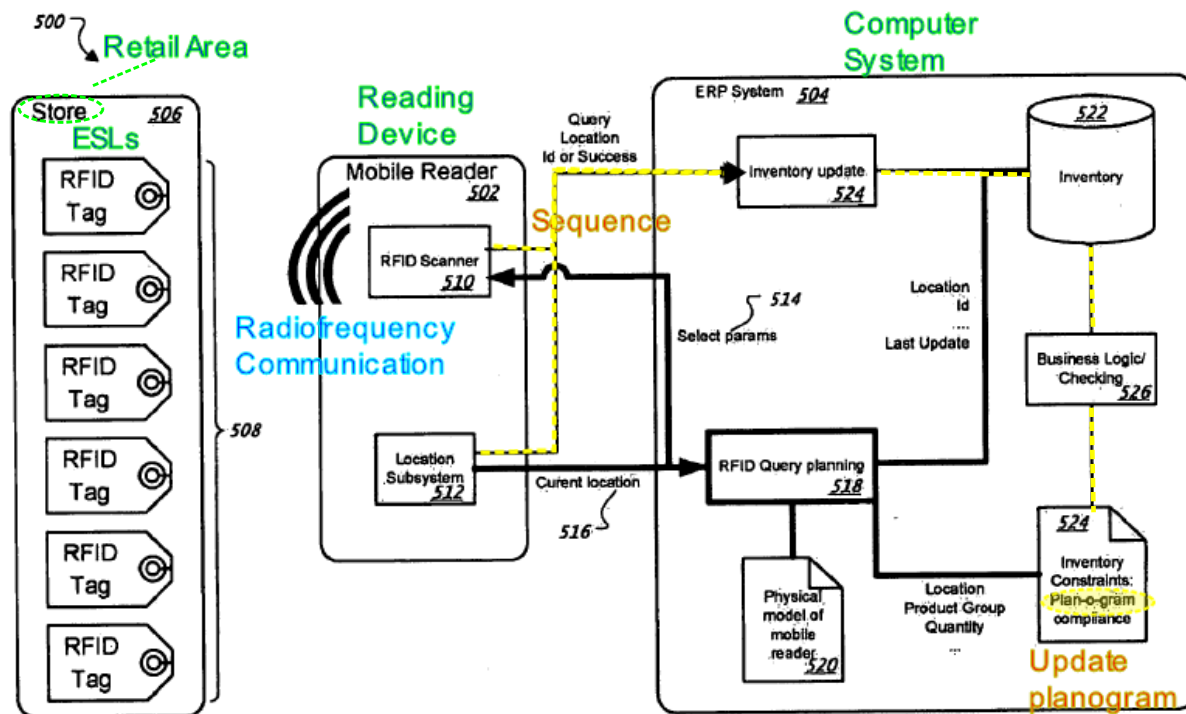


FIG. 5

Ex. 1006, FIG. 5 (annotated)

221. Therefore, in my opinion, Wu-Chaves discloses Claim 6.

Claim 16

[16a]

222. In my opinion, the system of claim 15 is rendered obvious by Wu.

[16b]

223. In my opinion, the limitations of [16b] are substantially the same as the corresponding limitations of [6b].

[16c]

224. In my opinion, the limitations of [16c] are substantially the same as the

corresponding limitations of [6c].

Motivation to Combine Wu and Chaves

225. In my opinion, a POSITA would have had a reason to combine Wu, the primary reference, with Chaves and would have had a reasonable expectation of success in doing so.

226. Specifically, in my opinion, a POSITA would have been motivated and able to implement Wu's business development as the retail area disclosed by Chaves. As discussed for Ground 1, limitation [1a] above, Wu already discloses a "business development" that has shelves on which products are arranged and "provided for consumers to choose." Ex. 1003, [1:22-33]. Chaves expressly discloses an enterprise resource system that associates products and their locations (Ex. 1006, [0003]) to be used at a "retail environment, such as a grocery store or discount store" (Ex. 1006, [0020]). In my opinion, a POSITA would find it obvious to implement Wu's system and methods, which, like Chaves's enterprise resource system, also manages an association between products and their locations, in a retail environment, which a POSITA would recognize to be a business development as expressly disclosed by Wu. This application would contribute to the universal and expressly disclosed objective of Wu to "inform[] the consumers the name, the price or the promotion of the products" for "varied products" (Ex. 1003, [1:21-25]). Further, this is the mere introduction of a well-known and

familiar setting (Chaves's retail environment) to a known technology (Wu's system and methods), which already has a similar setting (Wu's business development) and is analogous to a technology already successfully applied on this setting (Chaves's enterprise resource system). Therefore, in my opinion, the change would have been well within the skills of a POSITA, and the POSITA would have a reasonable likelihood of success in implementing it.

227. In my opinion, a POSITA would further have been motivated and able to implement the acquisition and transmission of a sequence of label identifiers (as disclosed by Chaves) in Wu's system and methods. Wu already discloses acquiring, by a reading device, label identifiers of a label to be added as well as of at least one adjacent label, and transmitting these label identifiers to the computer system. Please refer to my discussions for Ground 1, limitations [1c] and [1k]. Chaves expressly discloses acquiring, by a reading device, a sequence of label identifiers, and transmitting these label identifiers to the computer system. Please refer to my discussions above for this Ground 2. In my opinion, a POSITA would recognize that the labels/tags, reading devices, label identifiers, and computer systems of Wu and Chaves perform analogous functions and serve analogous purposes. By implementing Chaves's sequential acquisition and transmission in Wu's system and methods, in my opinion, a POSITA would realize the advantages of simplified and streamlined communications between the labels and reading device on one end, and between the reading device and the computer system on the

other end. In particular, in my opinion, a POSITA would realize that acquiring and transmitting the label identifiers in one sequence is more efficient and error-resistant than assembling multiple separately acquired or transmitted label identifiers in the acquiring or receiving end, which necessarily involves complicated logic to recognize which separate acquisitions/transmissions belong together and to decide when the separate acquisitions/transmissions forming a single logical sequence end. Such logic is not only complicated, but also error prone, because it relates to the inherently unreliable and error-prone fields of distributed communication and distributed computing. To implement such logic would increase the cost and reduce the reliability of the reading device (for handling the acquisitions) and the computer system (for receiving the transmissions). Thus, in my opinion, a POSITA would be motivated to implement Chaves's sequential acquisition and transmission in Wu's system and methods, to obtain a more efficient and error-resistant implementation and realize advantages such as cost saving and increased reliability. Not only would this have been obvious to try, it would also have yielded no more than predictable results due to the combination of familiar elements in a known way. Thus, in my opinion, a POSITA would have a reasonable expectation of success in making this modification.

228. In my opinion, a POSITA would further have been motivated and able to implement the transmission of a reference of article for the article associated with

the added label (as disclosed by Chaves) in Wu's system and methods. Wu already discloses a reading device that is capable of "transmitting varied information" to the computer system. Ex. 1003, [3:6-15]. Chaves then discloses transmitting, by the reading device, item identifiers (references of articles) to the computer system. As discussed, a POSITA would have known the advantages of transmitting a reference of an article associated with a newly added shelf label to the computer system such as removing one step from the method of Wu, thus simplifying the system and methods of Wu, reducing costs, and facilitating maintenance. Therefore the POSITA would be motivated to implement this modification. Not only would this have been obvious to try, but a POSITA would have a reasonable expectation of success in doing so because this represents combining well-known, conventional elements that each did no more than they would in separate operations, and would yield no more than what one would expect from such a combination.

229. In my opinion, a POSITA would also have been motivated and able to implement Wu's electronic shelf label to use the RFID technology expressly disclosed by Chaves. Wu already discloses acquisition of shelf label identifiers from shelf labels by reading devices. Chaves then discloses the use of RFID technology to achieve this purpose for Chaves's tags and reading devices. A POSITA at the time of the claimed invention would have been familiar with the ubiquitous, conventional and well-known RFID technology and their use in retail environments such as facilitating the acquisition of label identifiers from labels

implementing RFID technology by RFID readers. A POSITA would further have been familiar with the advantages of using RFID technology for such purpose, such as standardized components, easy replacement, enhanced security, and improved reliability. In fact, Chaves has disclosed advantages such as efficiency improvement of the use of RFID technology in inventory management for stores. Ex. 1006, [0002]. Therefore, a POSITA would have been motivated to make this modification in Wu to realize these well-known advantages. This would address Wu's expressly taught objective for an electronic shelf label updating method because this would, as discussed above, achieve better security and reliability, among other advantages, for such a method. A POSITA reading Wu in view of Chaves would understand that such a modification involves no more than adopting Chaves's expressly disclosed RFID tags for Wu's ESLs and Chaves's expressly disclosed mobile readers with RFID capacities for Wu's deploying devices. *Id.* At most, this is altering the system and methods disclosed in Wu by mere substitution of one element (the ESL/deploying device of Wu) for another known in the field (the RFID tag/mobile reader of Chaves), and further, the RFID tags and mobile readers of Chaves perform analogous functions in Chaves's system as the ESLs and deploying devices perform in Wu's system and methods. Not only would this have been obvious to try, it would also have yielded no more than predictable results due to the combination of familiar elements in a known way. Thus, a POSITA would have a reasonable expectation of success in making this

modification.

230. Therefore, in my opinion, a POSITA would have been motivated and able to combine Wu with Chaves and reach the Wu-Chaves combination that renders claims 1-6, 10, 11-16, 20 obvious.

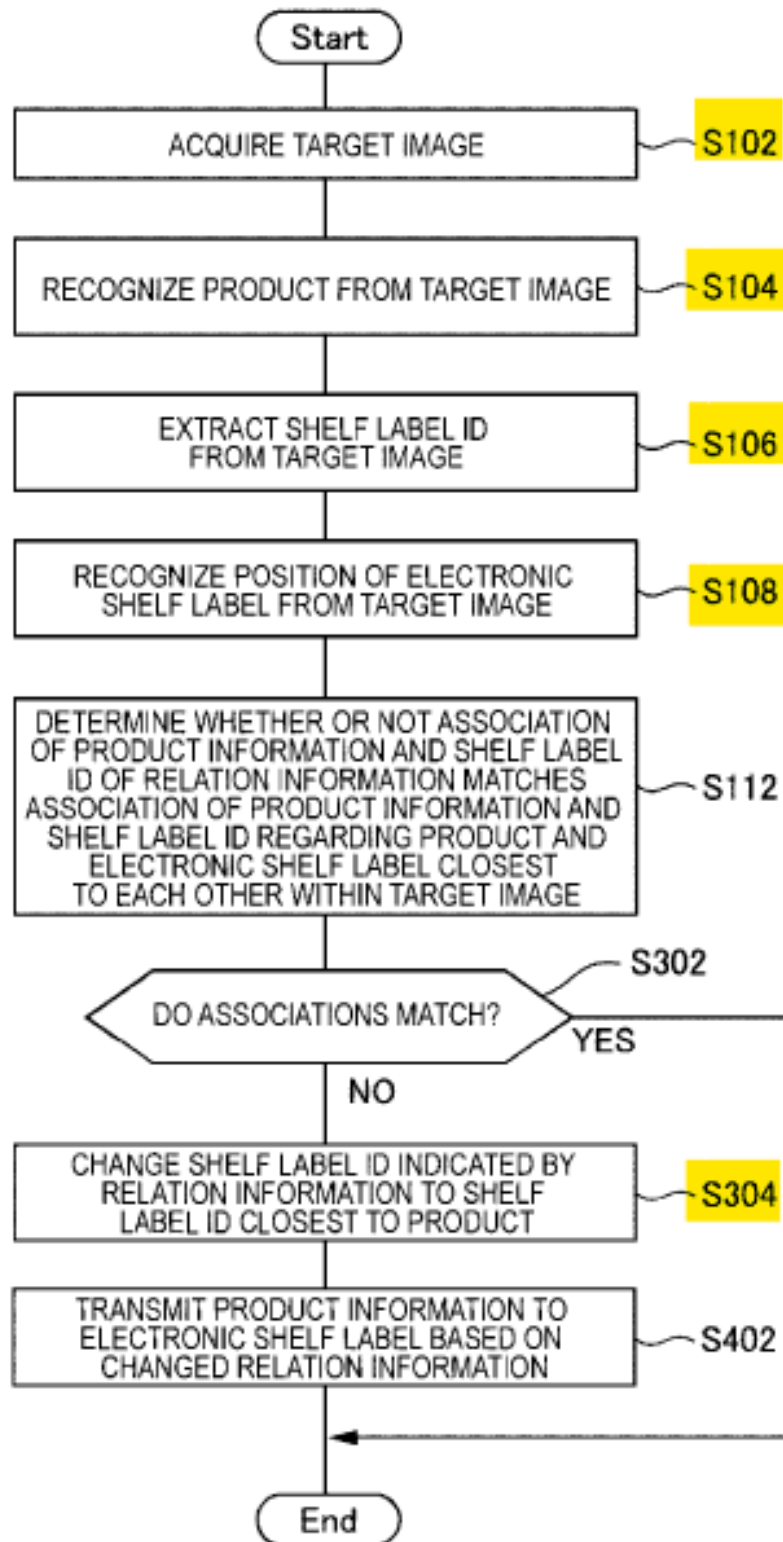
Ground 3: Claims 1-5, 7-9, 10, 11-15, 17-20 are Rendered Obvious by the Combination of Wu, Itou, and Auclair

231. As discussed, in my opinion claims 1-5, 10, 11-15, 20 are rendered obvious by Wu. Further, the same claims are additionally rendered obvious by Wu in combination with Itou and Auclair because Itou and Auclair make explicit disclosure of certain limitations of these claims, and a POSITA would have been motivated and able to combine these disclosures by Itou and Auclair into Wu. In addition, a POSITA would have been further motivated and able to combine the disclosures of Itou and Auclair related to the limitations of claims 7-9 and 17-19 into Wu, thus rendering claims 7-9 and 17-19 also obvious over the combination of Wu, Itou, and Auclair (Wu-Itou-Auclair).

Overview of Itou

232. Itou teaches an ESL management system that proposes a solution to the problem of incorrect product and ESL associations on a shelf. Ex. 1004, [0005]. Notably, Itou also presents a solution to the “situation in which an exhibited product does not have a corresponding electronic shelf label that is to display the product information” (*i.e.*, a situation in which a new ESL needs to be added). *Id.*

Itou discloses an information processing apparatus that includes a reading device that recognizes products and ESLs from an image. *Id.*, [0007]. The reading device extracts product and ESL identifiers from the image and determines a position of the products relative to their respective ESLs. *Id.* The system analyzes associations between products and ESLs to confirm information in a planogram, transmitting information acquired by the reading device to a central server. *Id.*, [0007], [0045], [0048].



Ex. 1004 (Itou), FIG 17 (annotated).

233. A composite and annotated graphics from several of Itou's figures, included below, depicts Itou's system, as well as the correspondence between Itou's components and their counterparts in Wu's system and methods (the corresponding counterparts in Wu are marked in green).

FIG. 1

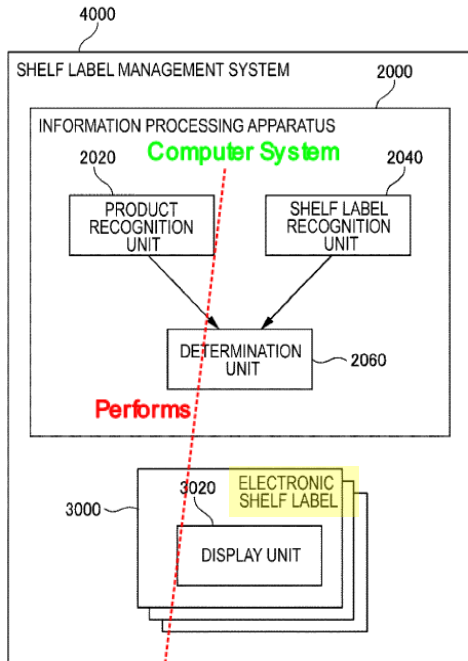


FIG. 4

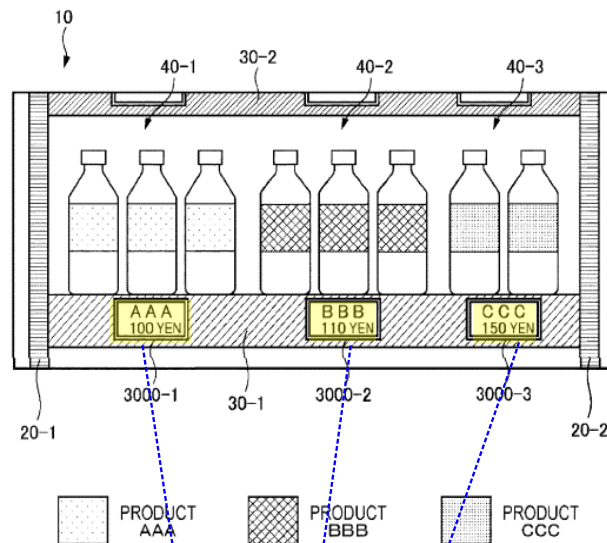


FIG. 15

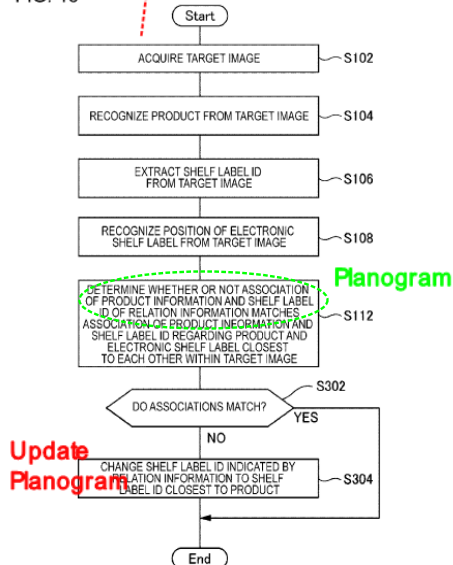


FIG. 5

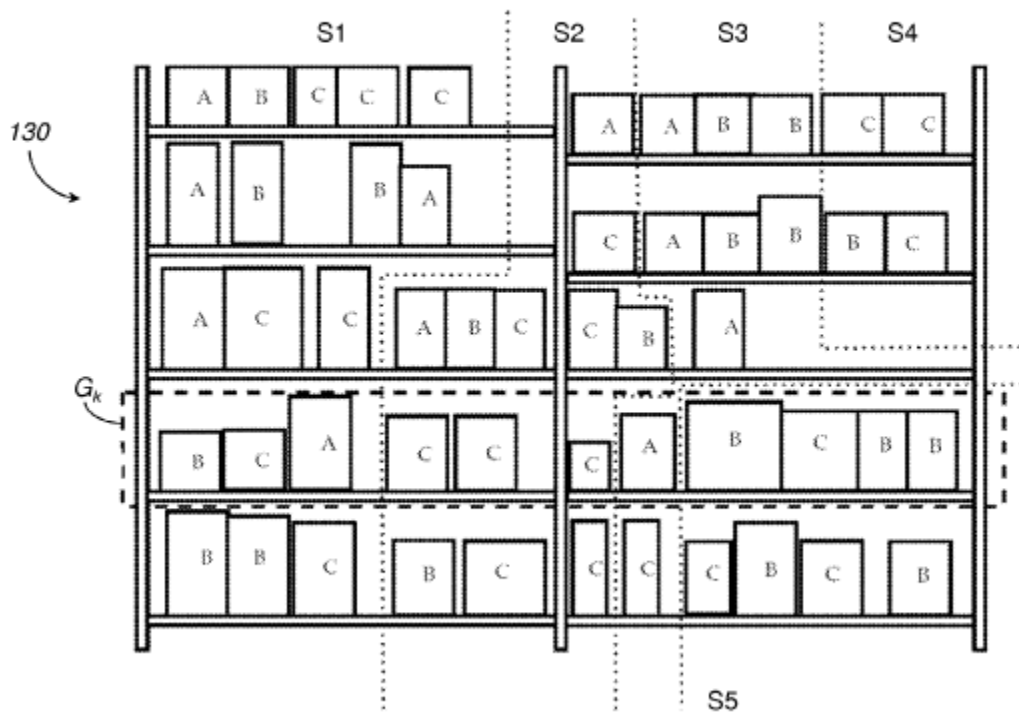
PRODUCT ID	PRODUCT NAME	PRICE	FEATURE VALUE
P001	AAA	100	01010...
P002	BBB	110	01011...
P003	CCC	150	00001...

234. In my opinion, Itou is analogous prior art to the '709 Patent. The '709 Patent is directed to methods and systems for updating a planogram including association data between articles and locations of such articles (Ex. 1001, [2:45-50, 3:65-68, 10:11-15]) while Itou is directed to “a shelf label management system, a control method, and a program” (Ex. 1004, [0001]) or more specifically “a technique for supporting the management of electronic shelf labels” (Ex. 1004, [0006]) that solves the problem of “managing whether or not the product and the electronic shelf label are correctly associated with each other.” (Ex. 1004, [0005]). Thus, both the '709 Patent and Itou are in the same field of endeavor for methods and systems managing association data between products/articles and shelf information (locations on shelf, or shelf label representing such locations).

Overview of Auclair

235. Auclair discloses a “[m]ethod for assigning an assortment of products to an existing planogram[.]” Ex. 1005, [Abstract]. The method disclosed by Auclair allows for “geometrical information [to be] updated using placement data of the product, such as the identification of the shelf on which the product is placed, the position of the product on this shelf and the length of linear the product occupies.” *Id.*, [0037]. FIG. 4 of Auclair shows the assortment of products.

Figure 4



Ex. 1005 (Auclair), FIG. 4.

236. In my opinion, Auclair is analogous prior art to the '709 Patent. The '709 Patent is directed to methods and systems for updating a planogram including association data between articles and locations of such articles (Ex. 1001, [2:45-50, 3:65-68, 10:11-15]) while Auclair “relates generally to the field of retail merchandising, and more specifically to the automated production of store-specific product placement within shelving areas using an existing planogram and a corresponding existing assortment of products” (Ex. 1005, [0001]). Thus, both Auclair and the '709 Patent are in the same field of endeavor for methods and

systems managing planograms representing product placement within retail shelf areas.

Claims 1-5, 10, 11-15, 20

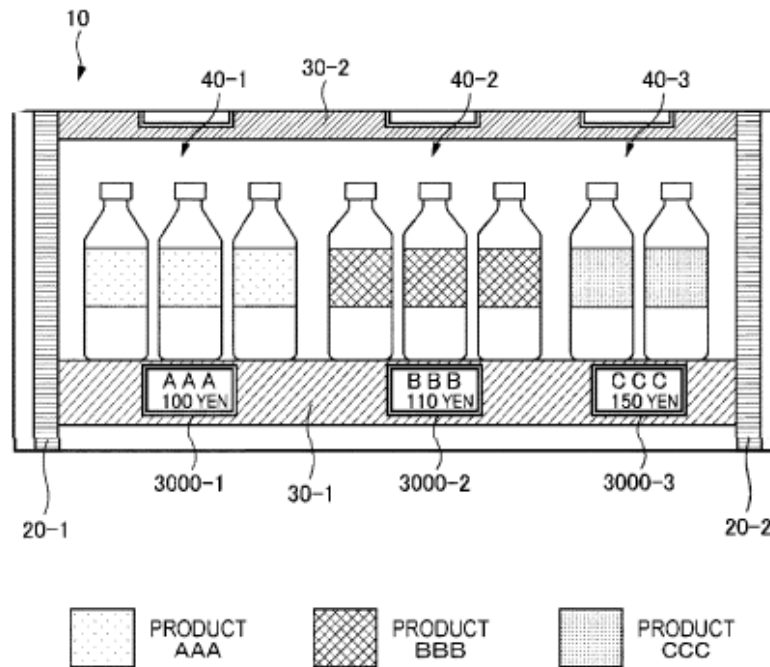
237. Itou provides explicit disclosures of certain limitations for claims 1-5, 10, 11-15, and 20, and thus, in my opinion, the combination of Wu, Itou and Auclair additionally renders these claims obvious.

“retail area”

238. Itou discloses this limitation (as claimed by e.g. [1a]). Ex. 1004, [0002] (“discussing “product shelving in a store”). Thus Itou provides an explicit disclosure of this limitation.

“acquiring, by a reading device, a sequence of label identifiers”

239. Itou discloses an information processing apparatus that includes a reading device that recognizes products and ESLs from an image. Ex. 1004, [0007]. As shown in FIG. 4, this can include multiple adjacent ESLs.



Ex. 1004, FIG. 4.

240. In my opinion, a POSITA would find this to be an explicit disclosure of a **reading device** that can **acquire a sequence of label identifiers** (as claimed by e.g. [1c]).

“transmitting, by the reading device, the sequence of label identifiers to the computer system”

241. Itou discloses an information processing apparatus that includes a reading device that recognizes products and ESLs from an image. Ex. 1004, [0007]. The reading device extracts product and ESL identifiers from the image and determines a position of the products relative to their respective ESLs. *Id.* The system analyzes associations between products and ESLs to confirm information in a planogram,

transmitting information acquired by the reading device to a central server. *Id.*, [0007], [0045], [0048]. Thus Itou provides an explicit disclosure of this limitation (claimed by e.g. [1k]).

Claims 7-9, 17-19

Claims 7

[7a]

242. In my opinion, the method of claim 1 is rendered obvious by Wu.

[7b]

243. Itou discloses “[a] product recognition unit [that] recognizes a product from a target image on which the product and an electronic shelf label are imaged[, and a] shelf label recognition unit [that] extracts a shelf label ID from the target image[.]” Ex. 1004, [Abstract]. Itou also discloses a determination unit that can “calculate[] the distance between [a] product [] and [an] electronic shelf label” based on the product and label recognized by the product recognition unit and label recognition unit. *Id.*, [0097]. Thus Itou discloses a **displacement measuring member** that measures the displacement (distance) between product and label.

244. Further, Auclair discusses a method of updating a planogram using quantitative measurements such as “the position of the product on this shelf and the length [] the product occupies.” Ex. 1005, [0037]. A POSITA would recognize that such method requires a **displacement measuring member** for measuring the position (a displacement against a reference point, see Ex. 1001, [8:14-18])

(discussing the use of a “dummy ESL” placed at the end of a shelf to obtain a measure of displacement)) and length.

245. Wu discloses that “the location code is obtained by performing a mathematical interpolation on the electronic shelf labels which are already installed.” Ex. 1003, [4:20-23]. In my opinion, a POSITA would understand that this interpolation method necessarily involves measurements, by the deploying device, of relative distances between the labels, as the mathematical interpolation necessarily and inherently uses such distances as input. Ex. 1009. Thus, as to be discussed below in the motivations to combine section for this ground, it is my opinion that a POSITA, in view of Itou and Auclair, would be motivated and able to implement Wu’s deploying device as a mobile device (similar to the “portable terminal” of Itou, *see* Ex. 1004, [0061]) with displacement measuring capacities, thus realizing the claimed “**displacement measuring member**” of [7b].

246. Thus, in my opinion, a POSITA would find [7b] obvious over Wu-Itou-Auclair.

[7c]

247. Itou discloses that the camera that captures the target image and processing apparatus may be realized as part of a portable terminal. Ex. 1004, [0061]. In my opinion, a POSITA would find it obvious to use the portable terminal described to **determine a displacement** (distance) between the adjacent labels, since the processing apparatus is capable of determining where a label is situated in a target

image and also capable of determining distance from other pictured content.

248. Auclair discloses measuring the length that a product occupies. Ex. 1005, [0037]. In my opinion, a POSITA would recognize that this is a **determination** of **displacement** (distance) between the adjacent labels.

249. In my opinion, Wu-Itou-Auclair renders claim 7 obvious, as a POSITA would find it obvious to perform the various obvious steps of the method of claim 7 together in order to achieve the purpose of the '709 patent to measure the displacement of ESLs and accurately update the planogram (*see* Ex. 1001, [5:43-51]).

Claim 8

[8a]

250. In my opinion, the method of claim 7 is rendered obvious by Wu-Itou-Auclair.

[8b]

251. In my opinion, a POSITA would understand that the disclosed reading device of Wu (“a smartphone [or] a tablet PC”, Ex. 1003, [3:12-13]), at the time of invention, would have likely included an accelerometer.

252. In my opinion, a POSITA reading disclosure of Wu in combination with the disclosure of Itou and Auclair, as discussed, would immediately consider measuring displacement of the reading device as an alternative to using the shelf label recognition method described to measure the distance between adjacent shelf labels. A POSITA would find this modification obvious, as it would not require

any alteration to the system disclosed by Wu. *Id.*

[8c]

253. In my opinion, for the same reasons I described in Ground 1, limitation [1k], sending the information obtained to the computer system to update the planogram is obvious.

254. In my opinion, Wu-Itou-Auclair renders claim 8 obvious.

Claim 9

[9a]

255. In my opinion, the method of claim 1 is rendered obvious by Wu-Itou-Auclair.

[9b]

256. In my opinion, the limitations of [16b] are substantially the same as the corresponding limitations of [1c].

[9c]

257. Auclair discloses “a method for assigning an assortment of products to an existing planogram which comprises:” modifying “an existing planogram” by “a user-defined new assortment of products and storing said new assortment in memory[,]” Ex. 1005, [0019-0021], which, in my opinion, would motivate a POSITA to use the distance measuring capacity of Itou to determine displacement. Ex. 1009. The method of Auclair includes a “planogram in memory” and a “processor which has read/write access to the memory.” Ex. 1005, [0022-0023]. Auclair discusses the option of updating “geometrical information [stored in the planogram] using placement data of [a new] product, such as the identification of

the shelf on which the product is placed, the position of the product on this shelf and the length [] the product occupies.” Id. at [0037]. In my opinion, a POSITA reading the disclosure of Auclair would be motivated to include “geometrical information” such as the characteristic dimensions of the locations associated with shelf labels. Ex. 1009. The reading device of Wu (a smartphone or tablet PC) could easily support the acquisition of such information, by user input (*e.g.*, by keyboard). Alternatively, in my opinion, as Itou discloses a method of calculating distance from a target image, a POSITA would find it obvious to use the camera of Wu’s reading device to acquire such information.

258. Therefore, in my opinion, a POSITA would find [9c] obvious over Wu-Itou-Auclair.

[9d]

259. For the same reasons I described in Ground 1, limitation [1k], sending the information obtained to the computer system to update the planogram is obvious.

260. In my opinion, Wu-Itou-Auclair renders claim 9 obvious.

Claim 17

[17a]

261. In my opinion, the system of claim 11 is rendered obvious by Wu-Itou-Auclair.

[17b]

262. In my opinion, the limitations of [17b] are substantially the same as the corresponding limitations of [7b].

[17c]

263. In my opinion, the limitations of [17c] are substantially the same as the corresponding limitations of [7c].

Claim 18

[18a]

264. In my opinion, the system of claim 17 is rendered obvious by Wu-Itou-Auclair.

[18b]

265. In my opinion, the limitations of [18b] are substantially the same as the corresponding limitations of [8b].

[18c]

266. In my opinion, the limitations of [18c] are substantially the same as the corresponding limitations of [8c].

Claim 19

[19a]

267. In my opinion, the system of claim 18 is rendered obvious by Wu-Itou-Auclair.

[19b]

268. In my opinion, the limitations of [19b] are substantially the same as the corresponding limitations of [9b].

[19c]

269. In my opinion, the limitations of [19c] are substantially the same as the corresponding limitations of [9c].

Motivations to Combine Wu, Itou, and Auclair

270. In my opinion, a POSITA would have had a reason to combine Wu, the primary reference, with Itou and Auclair and would have had a reasonable expectation of success in doing so.

271. Specifically, a POSITA would have been motivated and able to implement Wu's business development as the retail area disclosed by Itou. As I discussed in Ground 1 for limitation [1a], Wu already discloses a "business development" that has shelves on which products are arranged and "provided for consumers to choose." Ex. 1003, [1:22-33]. Itou then expressly discloses an ESL management system that proposes a solution to the problem of incorrect product and ESL associations on a shelf (Ex. 1004, [0005]) to be used in a store (Ex. 1004, [0002]), which is a retail area. In my opinion, a POSITA would find it obvious to implement Wu's system and methods, which, like Itou's ESL management system, also manages an association between products and their locations, in a store or retail area, which a POSITA would recognize to be a business development as expressly disclosed by Wu. *Id.* This application would contribute to the universal and expressly disclosed objective of Wu to "inform[] the consumers the name, the price or the promotion of the products" for "varied products" (Ex. 1003, [1:21-25]). Further, this is the mere introduction of a well-known and familiar setting (Itou's store) to a known technology (Wu's system and methods), which already has a similar setting (Wu's business development) and is analogous to a technology already successfully applied on this setting (Itou's ESL management system).

Therefore, the change would have been well within the skills of a POSITA and the POSITA would have a reasonable likelihood of success in implementing it.

272. In my opinion, a POSITA would further have been motivated and able to implement the acquisition and transmission of a sequence of label identifiers (as disclosed by Itou) in Wu's system and methods. Wu already discloses acquiring, by a reading device, label identifiers of a label to be added as well as of at least one adjacent label, and transmitting these label identifiers to the computer system. Itou then expressly discloses acquiring, by a reading device, a sequence of label identifiers, and transmitting these label identifiers to the computer system. A POSITA would recognize that the ESLs, reading devices, label identifiers, and computer systems of Wu and Itou perform analogous functions and serve analogous purposes. By implement Itou's sequential acquisition and transmission in Wu's system and methods, a POSITA would realize the advantages, as discussed above, for the Wu-Chaves combination. In my opinion, a POSITA would be motivated to implement Itou's sequential acquisition and transmission in Wu's system and methods, to realize such advantages. Not only would this have been obvious to try, it would also have yielded no more than predictable results due to the combination of familiar elements in a known way. Thus, a POSITA would have a reasonable expectation of success in making this modification.

273. In my opinion, a POSITA, with knowledge of Itou's portable device with camera and quantitative reading of positions, as well as of Auclair's size

measurement, would have been motivated and able to modify Wu so as to implement Wu's reading device as a mobile device with displacement measuring capacities, and also to use such displacement measuring capacities in the acquisition of location data (including distances between labels and dimensions of labels) by such reading device, as claimed by claims 7-9 and 17-19. Wu already discloses the reading device and its capabilities of capturing relative location information of shelf labels. Wu further discloses that the reading device could be a smart phone, a tablet PC or a handheld device. Ex. 1003, [3:11-13]. In my opinion, a POSITA would have known the capacities of smart phones, tablet PCs, and similar handheld devices, including their cameras and their capacities of measuring displacements. Itou then discloses a reading device through a portable device with a camera that can quantitatively read positions of labels. Auclair further discloses planogram management through quantitative readings such as readings of sizes (dimensions) of labels. In my opinion, a POSITA would recognize that Wu's disclosure of a smart phone, a tablet PC, or a handheld device as the reading device could easily accommodate the use of a portable device with camera and quantitative measuring abilities, such as any modern smart phone or tablet PC or similar handheld device, as the reading device. A POSITA would know that such reading device would have the quantitative measuring capacities as disclosed by Itou and Auclair. *Id.* A POSITA would further know that such reading device would, like any modern smart phone or tablet PC or similar handheld device, be

equipped with displacement reading capacities, and such displacement reading capacity furnishes another method to take quantitative measurements of labels (such as of distances between labels and dimensions of labels, as disclosed by Itou and Auclair).

274. Wu discloses using *mathematical* interpolation and extrapolation to determine the location of a newly added ESL. Ex. 1003, [4:9-25]. A POSITA would understand that, by introducing fully quantitative measurements of labels (such as of distances between labels and dimensions of labels), not just ordinal measurements of labels, such interpolation and extrapolation can be carried out more correctly and can furnish more information to be used in planogram management. For example, using fully quantitative measurement of labels in interpolation and extrapolation would provide valuable guidance on the utilization ratio of shelves, facilitating inventory management, an expressly disclosed objective of the '709 Patent (See Ex. 1001, [2:28-36], discussing “management level of stock” and “estimat[ing] the numbers of articles on the shelves” as problems to be solved). Further, using fully quantitative measurement of labels in interpolation and extrapolation would agree better with the *mathematical* nature of such operations, avoiding mismatches and errors in such calculations in an ordinal measurement of labels, where the ordinal placements of labels are naturally represented as integers instead of floating point numbers suitable for mathematical interpolations and extrapolations, and thus introducing errors and complexities.

Thus, a POSITA would be motivated to implement Wu's reading device as a modern smart phone or tablet PC or similar handheld device that has cameras and displacement measurement capacities, and to employ such cameras and/or displacement measurement capacities to take qualitative measurements of labels (such as of distances between labels and dimensions of labels), and to use such qualitative measurements in the expressly disclosed steps of mathematical interpolation and extrapolation of Wu, so as to realize the above-discussed advantages. Ex. 1009. A POSITA reading Wu in view of Itou and Auclair would understand that such a modification involves no more than using a modern smart phone or tablet PC or similar handheld device that has cameras and displacement measurement capacities for Wu's reading device, an option expressly disclosed by Wu, and further to fully utilize the capacities provided by such reading device, similar to the way already implemented by Itou and Auclair. Not only would this have been obvious to try, it would also have yielded no more than predictable results due to the combination of familiar elements in a known way. Thus, a POSITA would have a reasonable expectation of success in making this modification.

275. In my opinion, a POSITA would have been motivated and able to combine Wu with Itou and Auclair and reach the Wu-Itou-Auclair combination that renders claims 1-5, 7-9, 10, 11-15, and 17-20 obvious.

Ground 4: Claims 1-5, 10, 11-15, 20 are Rendered Obvious by Wu in Combination with Fujiwara

276. In my opinion, claims 1-5, 10, 11-15, 20 are rendered obvious by Wu. Further, the same claims are additionally rendered obvious by Wu in combination with Fujiwara because Fujiwara makes explicit disclosures of certain limitations of these claims, and a POSITA would have been motivated and able to combine these disclosures by Fujiwara into Wu.

Overview of Fujiwara

277. Fujiwara discloses “a collaborative system of electronic shelf label and mobile information terminal that provides functions for specifying a location of products in a store and presenting the product location, using electronic shelf labels and mobile information terminals equipped with IC tags and light emitting means.” Ex. 1007, [Abstract]. The reference discloses “[a]n IC tag reader [that] is installed on each shelf part [] forming a product display shelf [], and includ[ing] reading means [] and read-information transmitting means.” *Id.*, [0047]. This reading device “collectively reads the shelf label IDs stored in the IC tags which are prepared for one or more electronic shelf labels installed in the shelf part.” *Id.* “The read-information transmitting means wirelessly transmits the read shelf label IDs and the sender ID to the store server.” *Id.* “The store server has an electronic shelf label database that stores the shelf label product information that correlates the electronic shelf label information with the product information, identifies the

location information of the reading device from the sender ID received from the reading device, associates the location information with one or more received electronic shelf label IDs, and registers and stores the shelf label location information that identifies the location of the electronic shelf label in the electronic shelf label database.” *Id.*, [0008].

278. In my opinion, Fujiwara is analogous prior art to the ’709 Patent. The ’709 Patent is directed to methods and systems for updating a planogram including association data between articles and locations of such articles (Ex. 1001, [2:45-50, 3:65-68, 10:11-15]) while Fujiwara is directed to an electronic shelf label database that “that stores the shelf label product information that correlates the electronic shelf label information with the product information” and to systems and methods to “register[] and store[] the shelf label location information that identifies the location of the electronic shelf label in the electronic shelf label database” (Ex. 1007, [0008]). Thus, both Fujiwara and the ’709 Patent are in the same field of endeavor for methods and systems managing association data between articles/products and locations of such articles/products.

“retail area”

279. Fujiwara is directed to a system to be used in a **store**. Ex. 1007, [0001].

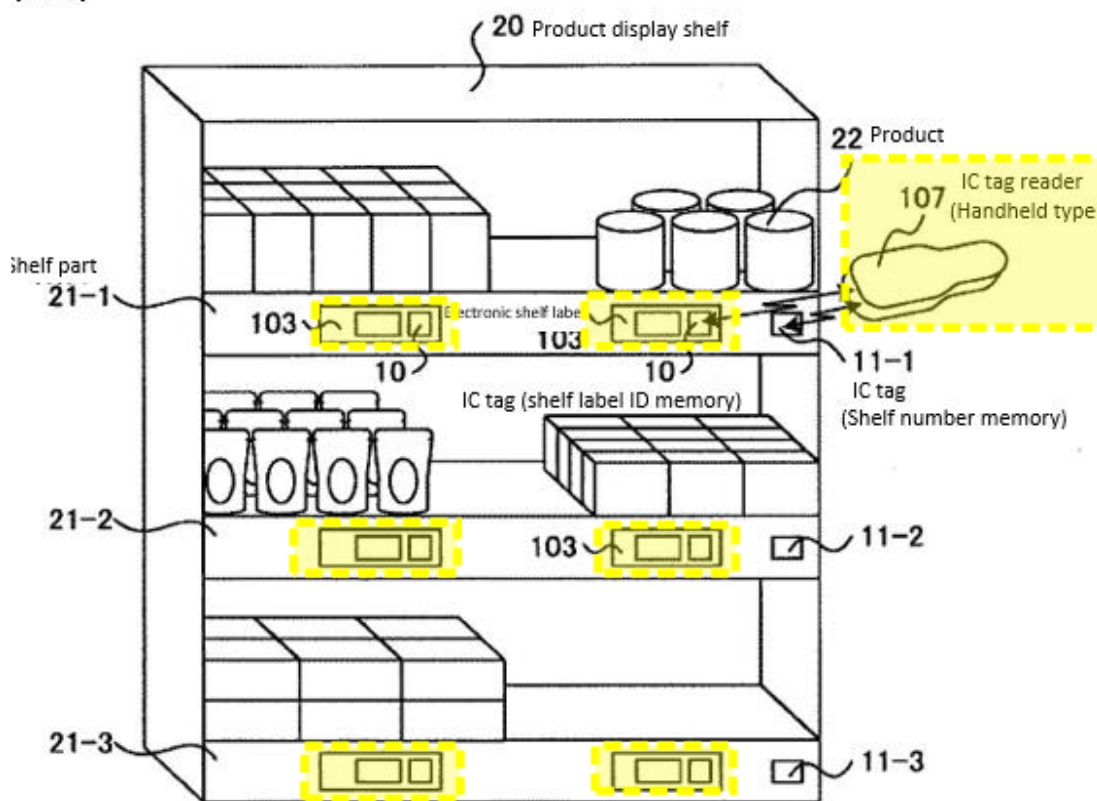
This is an explicit disclosure of the claimed **retail area** (e.g., by [1a]).

“acquiring, by a reading device, a sequence of label identifiers”

280. Fujiwara discloses such forms of acquisition. Ex. 1007, [0047] (“An IC tag reader is installed on each shelf part 21 forming a product display shelf 20, and includes reading means 131 and read-information transmitting means 132. The reading means 131 collectively reads the shelf label IDs stored in the IC tags 10 which are prepared for one or more electronic shelf labels 103 installed in the shelf part 21. The read-information transmitting means wirelessly transmits the read shelf label IDs and the sender ID to the store server”).

281. FIG. 11 of Fujiwara, annotated below, further shows a handheld IC tag reader reading a plurality of shelf label IDs collectively from a plurality of shelf labels. A POSITA would find that such plurality of shelf label IDs form a **sequence of label identifiers**.

[FIG. 11]



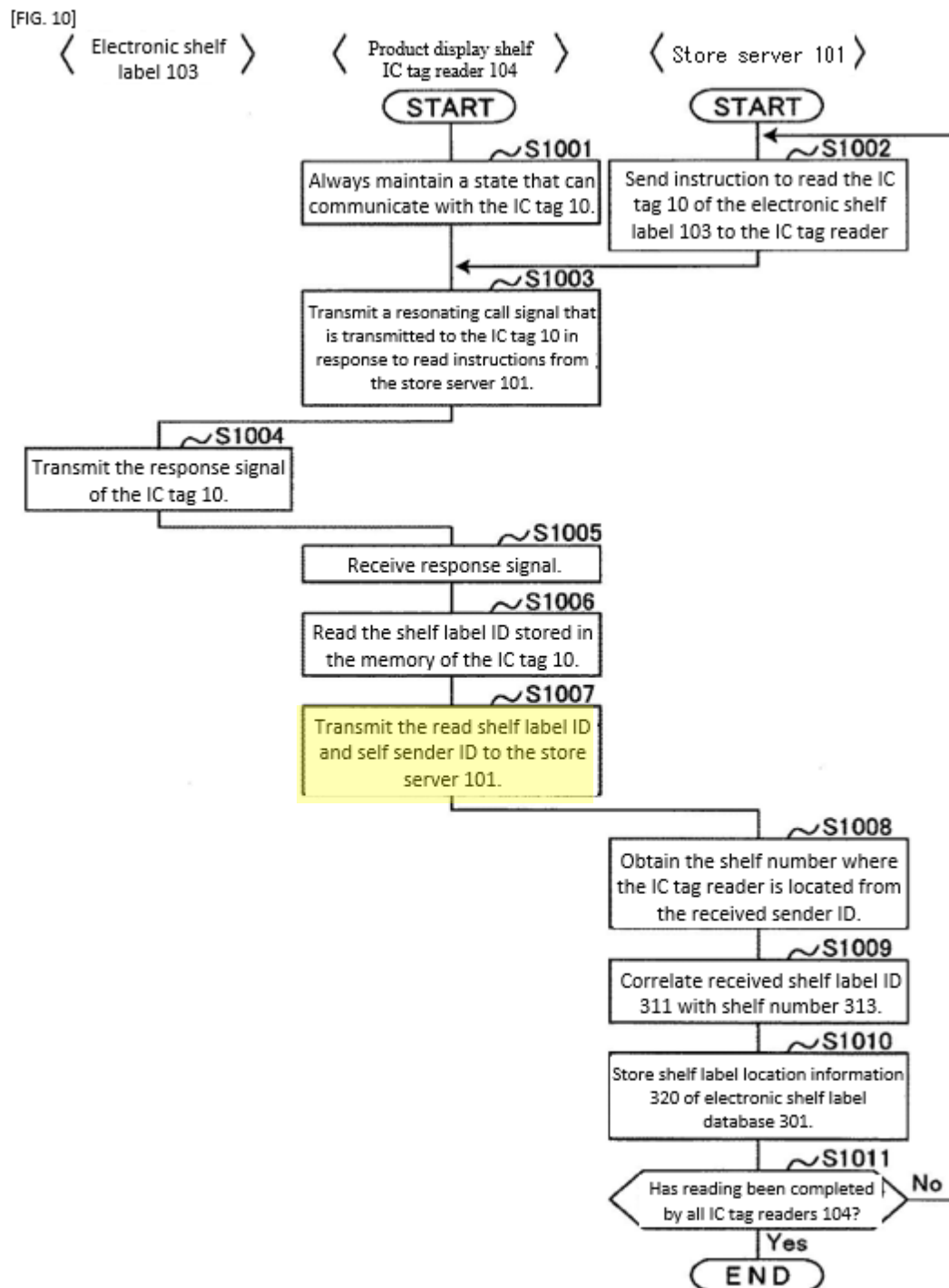
Ex. 1007 (Fujiwara), FIG. 11 (annotated)

282. A POSITA would find this to be an explicit disclosure of a **reading device** that can **acquire a sequence of label identifiers** (as claimed by e.g. [1c]).

“transmitting, by the reading device, the sequence of label identifiers to the computer system”

283. Fujiwara discloses such forms of transmission. Ex. 1007, [0047] (“The read-information transmitting means [] wirelessly transmits the read shelf label IDs and the sender ID to the store server”). FIG. 10 of Fujiwara, annotated below, shows the transmission of such shelf label IDs. It is my opinion that, as Fujiwara explicitly

discloses that the reading means read *collectively* shelf label IDs (note the plural) from IC tags, this is the claimed **transmission** of **sequence of label identifiers**.



Ex. 1007 (Fujiwara), FIG. 10 (annotated)

284. In my opinion, POSITA would find this to be an explicit disclosure of a **reading device** that can **acquire a sequence of label identifiers** (as claimed by *e.g.* [1k]).

Motivation to Combine Wu and Fujiwara

285. In my opinion, a POSITA would have had a reason to combine Wu, the primary reference, with Fujiwara and would have had a reasonable expectation of success in doing so.

286. Specifically, in my opinion, a POSITA would have been motivated and able to implement Wu's business development as the retail area disclosed by Fujiwara. As discussed in Ground 1, limitation [1a] above, Wu already discloses a "business development" that has shelves on which products are arranged and "provided for consumers to choose." Ex. 1003, [1:22-33]. Fujiwara expressly discloses a collaborative system involving electronic shelf labels to be used in a store (Ex. 1006. [0001]). In my opinion, a POSITA would find it obvious to implement Wu's system and methods, which, like Fujiwara's collaborative system involving electronic shelf labels, also manages an association between products and their locations, in a retail environment, which a POSITA would recognize to be a business development as expressly disclosed by Wu. *Id.* This application would contribute to the universal and expressly disclosed objective of Wu to "inform[] the consumers the name, the price or the promotion of the products" for "varied

products” (Ex. 1003, [1:21-25]). Further, this is the mere introduction of a well-known and familiar setting (Fujiwara’s store) to a known technology (Wu’s system and methods), which already has a similar setting (Wu’s business development) and is analogous to a technology already successfully applied on this setting (Fujiwara’s collaborative system). Therefore, the change would have been well within the skills of a POSITA and the POSITA would have a reasonable likelihood of success in implementing it.

287. In my opinion, a POSITA would further have been motivated and able to implement the acquisition and transmission of a sequence of label identifiers (as disclosed by Fujiwara) in Wu’s system and methods. Wu already discloses acquiring, by a reading device, label identifiers of a label to be added as well as of at least one adjacent label, and transmitting these label identifiers to the computer system. Please refer to my discussions for Ground 1, limitations [1c], [1k]. Fujiwara then expressly discloses acquiring, by a reading device, a sequence of label identifiers, and transmitting these label identifiers to the computer system. Please refer to my discussions for this Ground 4 above. In my opinion, a POSITA would have recognized that the labels/tags, reading devices, label identifiers, and computer systems of Wu and Fujiwara perform analogous functions and serve analogous purposes. By implementing Fujiwara’s sequential acquisition and transmission in Wu’s system and methods, in my opinion, a POSITA would have realized the advantages as discussed above for the Wu-Chaves combination. Thus,

in my opinion, a POSITA would have been motivated to implement Fujiwara's sequential acquisition and transmission in Wu's system and methods, to realize such advantages. Not only would this have been obvious to try, it would also have yielded no more than predictable results due to the combination of familiar elements in a known way. Thus, in my opinion, a POSITA would have a reasonable expectation of success in making this modification.

288. In my opinion, a POSITA would have been motivated and able to combine Wu with Fujiwara and reach the Wu-Fujiwara combination that renders claims 1-5, 10, 11-15, 20 obvious.

V. CONCLUSION

289. I reserve the right to supplement my opinions to address any information obtained, or positions taken, based on any new information introduced throughout this proceeding.

290. I declare under penalty of perjury that the foregoing is true and accurate to the best of my ability.