

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASUSTEK COMPUTER INC. AND ASUS COMPUTER INTERNATIONAL,

Petitioners

v.

MAXELL, LTD.,

Patent Owner

Case: IPR2019-00071

U.S. Patent No. 6,430,498

Issued: August 6, 2002

Inventor(s): Kishiko Maruyama, Shigeru Shimada, and Toshiichirou Sasaki

Title: PORTABLE TERMINAL WITH THE FUNCTION OF WALKING
NAVIGATION

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §311-319 AND 37 C.F.R. §42**

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<i>Williamson v. Citrix Online, LLC</i> , 792 F.3d 1339 (Fed. Cir. 2015) (en banc)	15

TABLE OF EXHIBITS

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ASUS-1001	U.S. Patent 6,430,498 (“the ’498 Patent”)
ASUS-1002	File History of U.S. Patent 6,430,498 (“’498 File History”)
ASUS-1003	Declaration of Mr. Scott Andrews (‘Andrews Decl.”)
ASUS-1004	Japanese Patent Number H07-280583 (“Japanese Suzuki”)
ASUS-1005	English translation of Japanese Patent Number H07-280583 (“Suzuki”)
ASUS-1006	Declaration of Noah Oskow regarding translation of Suzuki (“Oskow1”)
ASUS-1007	Japanese Patent Number H10-170301 (“Japanese Nosaka”)
ASUS-1008	English translation of Japanese Patent Number H10-170301 (“Nosaka”)
ASUS-1009	Declaration of Noah Oskow regarding translation of Nosaka (“Oskow2”)
ASUS-1010	U.S. Patent No. 5,781,150 (“Norris”)
ASUS-1011	U.S. Patent No. 5,592,382 (“Colley”)
ASUS-1012	Excerpts of Merriam Webster’s Collegiate Dictionary, Tenth Edition, (1993) (“Webster”)
ASUS-1013	U.S. Patent No. 5,875,412 (“Sulich”)
ASUS-1014	TravTek Global Evaluation and Executive Summary (Publication No. FHWA-RD-96-031 March 1996), (“TravTek1”)

ASUS-1015	TravTek System Architecture Evaluation (Publication No. FHWA-RD-94-141 July 1995), (“TravTek2”)
ASUS-1016	TravTek Evaluation Orlando Test Network Study (Publication No. FHWA-RD-95-162 January 1996), (“TravTek3”)
ASUS-1017	Printout of Smithsonian webpage regarding Magellan Nav 100 product (“Magellan”)
ASUS-1018	Jim Mateja, <i>New Systems Keep You Safe and On Track</i> , CHICAGO TRIBUNE (Jan. 22, 1995), printed from http://articles.chicagotribune.com/1995-01-22/travel/9501220175_1_delco-electronics-aftermarket-system-radio-slot
ASUS-1019	U.S. Patent No. 5,627,547 (“Ramaswamy”)
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I. INTRODUCTION

ASUSTek Computer Inc. and ASUS Computer International (collectively “ASUS” or “Petitioners”) petition for *Inter Partes* Review (“IPR”) seeking cancellation of claims 1-13 (“the Challenged Claims”) of U.S. Patent No. 6,430,498 (ASUS-1001, “the ’498 Patent”), assigned to Maxell, Ltd. (“Patent Owner”). Each of these claims are obvious in view of the prior art.

As will be shown below, the ’498 Patent generally relates to an apparatus for providing navigation information to a pedestrian user on a display. It uses only conventional and ordinary technological components (including a GPS, an infrared ray sensor, a control unit a compass, a gyro, a clinometer, and a control unit (e.g. a processor)) that were known to a POSITA at the alleged time of invention. Handheld portable GPS receivers with built-in compasses were well-known. The only alleged point of novelty during the prosecution of the ’498 Patent was the graphic display of different types of route guidance information. The three alleged points of novelty (one for each independent claim) essentially amount to providing navigation information (1) showing a *straight* line to a destination, (2) showing a *bent* line to a destination, and (3) showing a route to a partner’s portable device. As Petitioners show below, none of these elements were novel or non-obvious.

II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real Party in Interest (37 C.F.R. § 42.8(b)(1))

The real parties in interest for Petitioners are ASUSTek Computer Inc. and ASUS Computer International.

B. Related Matters (37 C.F.R. § 42.8(b)(2))

The '498 Patent is at issue in *Maxell, Ltd. v. ASUSTeK Computer Inc. and ASUS Computer International*, Case No. 3-18-cv-01788 (N.D. Cal.), which was originally filed in the Central District of California and transferred pursuant to a Court order to the Northern District of California. *Maxell, Ltd. v. ASUSTeK Computer Inc. and ASUS Computer International*, Case No. 2-17-cv-07528 (C.D. Cal.).

C. Designation of Counsel (37 C.F.R. § 42.8(b)(3))

Lead counsel is Christopher T.L. Douglas (Reg. No. 56,950) of Alston & Bird LLP, Bank of America Plaza, 101 South Tryon Street, Suite 4000, Charlotte, NC 28280-4000, Tel: 704.444.1000, Fax: 704.444.1111. Backup counsel is Thomas W. Davison (Reg. No. 57,160), 950 F Street, NW, Washington, DC 20004-1404, Tel: 202-239-3933, Fax: (202) 654-4913 and Derek S. Neilson (Reg. No. 65,447), 2828 North Harwood Street, 18th Floor, Dallas, TX 75201-2139, Tel: 214.922.3400, Fax:

214.922.3899. Pursuant to 37 C.F.R. § 42.10(b), Powers of Attorney are being submitted with this Petition.

D. Service Information (37 C.F.R. § 42.8(b)(4))

Petitioners consent to electronic service directed to Christopher.Douglas@alston.com, Tom.Davison@alston.com, Derek.Neilson@alston.com, and ASUS-Maxell@alston.com.

III. PAYMENT OF FEES (37 C.F.R. §42.103)

Petitioners authorize the Patent Office to charge Deposit Account No. 16-0605 for the Petition fee set forth in 37 C.F.R. §42.15(a), and for any additional fees.

IV. REQUIREMENTS FOR IPR UNDER 37 C.F.R. §42.104

A. Grounds for Standing (37 C.F.R. §42.104(a))

Petitioner certifies that the '498 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an IPR challenging Claims 1-13 on the grounds identified herein.

B. Summary of the Challenges (37 C.F.R. §42.104(b)(1)–(2))

Pursuant to Rules 42.22(a)(1) and 42.104(b)(1)–(2), Petitioners request cancellation of Claims 1-13 in the '498 Patent on the following grounds:

Ground 1: Claims 1-3 and 5-8 of the '498 Patent are unpatentable under 35 U.S.C. §103 over the combination of Suzuki and Nosaka.

Ground 2: Claims 1-3 and 5-8 of the '498 Patent are unpatentable under 35 U.S.C. §103 over the combination of the Suzuki and Colley.

Ground 3: Claims 1-3 and 5-7 of the '498 Patent are unpatentable under 35 U.S.C. §103 over the combination of the Suzuki, Colley, and Ellenby.

Ground 4: Claims 1-7 and 9-13 of the '498 Patent are unpatentable under 35 U.S.C. §103 over the combination of Norris and Colley.

Count 5: Claims 1-2, 5-6, 8, 10, and 12 of the '498 Patent are unpatentable under 35 U.S.C. §103 over the combination of Norris, Colley, and Nosaka.

Count 6: Claims 1-2, 5-6, 8, 10, and 12 of the '498 Patent are unpatentable under 35 U.S.C. § 103 over the combination of Norris, Colley, and Ellenby.

C. Claim Construction (37 C.F.R. §42.104(b)(3))

An explanation of how the Challenged Claims of the '498 Patent should be construed is provided in Section VI, below.

D. Unpatentability of the Construed Claims (37 C.F.R. §42.104(b)(4))

An explanation of how the Challenged Claims of the '498 Patent are unpatentable under the statutory grounds identified above is provided in Section VII, below.

E. Supporting Evidence (37 C.F.R. §42.104(b)(5))

The text below provides exhibit numbers of the supporting evidence relied upon to support the challenge and the relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge. A Table of Exhibits with the exhibit numbers and a brief description of each exhibit is set forth above.

V. BACKGROUND OF THE '498 PATENT

A. Technology Background and Patent Summary

As noted earlier, the '498 Patent claims priority to a U.S. application filed on July 11, 2000, and claims priority to a Japanese patent application filed on July 12, 1999.

The '498 patent describes “a portable terminal provided with the function of walking navigation, which can supply location-related information to the walking user.” ASUS-1001, 1:10–13. According to the '498 patent, conventional navigation systems at the time of the invention were unsuitable for walking navigation because they were too large to be carried by a walking user. *Id.* at 1:31–38. At the same time, maps provided by conventional map information services could not be displayed clearly on the small screens of portable telephones. *Id.* at 1:46–52. The invention of the '498 patent purportedly addressed these problems by providing a portable

terminal that can “supply location information easier for the user to understand during walking.” *Id.* at 2:53–54. The portable terminal obtains location information (by using a GPS receiver and an infrared ray sensor) and direction information of the terminal (by using a compass, gyro, and clinometer to determine the direction of the tip and/or the display of the portable terminal). *Id.* at Abstract, 2:66–3:4. Based on this location and direction information, the portable terminal obtains and displays information such as route guidance for reaching a destination or, if no destination is selected, neighborhood guidance relating to entertainment, businesses, and restaurants. *Id.* at Abstract, 3:5– 42.

The independent claims of the '498 Patent are directed to three separate embodiments, each using a claimed means for getting location information and means for getting direction information. In the first embodiment, as illustrated in Figs. 3(a) and 3(b), a straight arrow indicating direction and distance to the destination is displayed to the user (“as the crow flies,” without turn-by-turn directions).

FIG. 3(a)

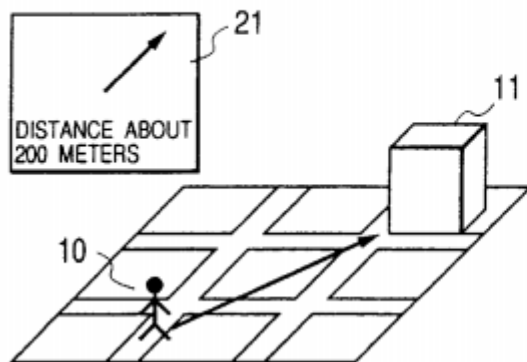
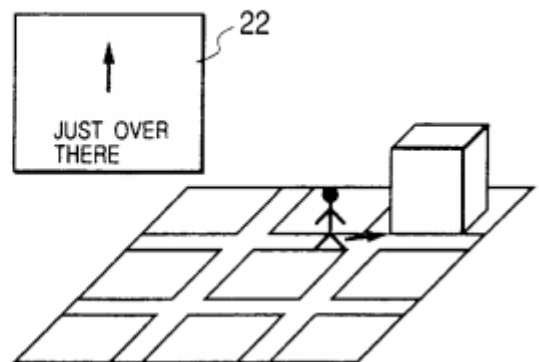


FIG. 3(b)



In the second embodiment, as illustrated in Figs. 3(c) through 3(f), a bent line is displayed with an arrow indicating a direction of movement.

FIG. 3(c)

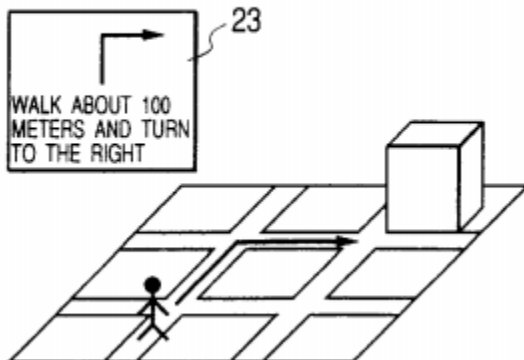
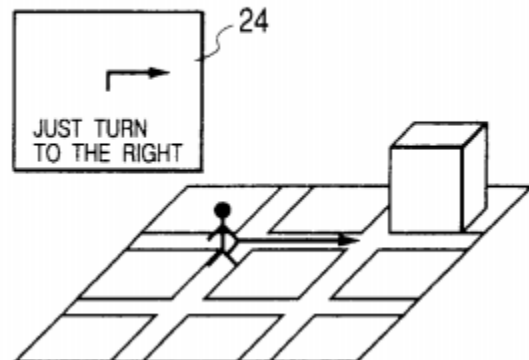
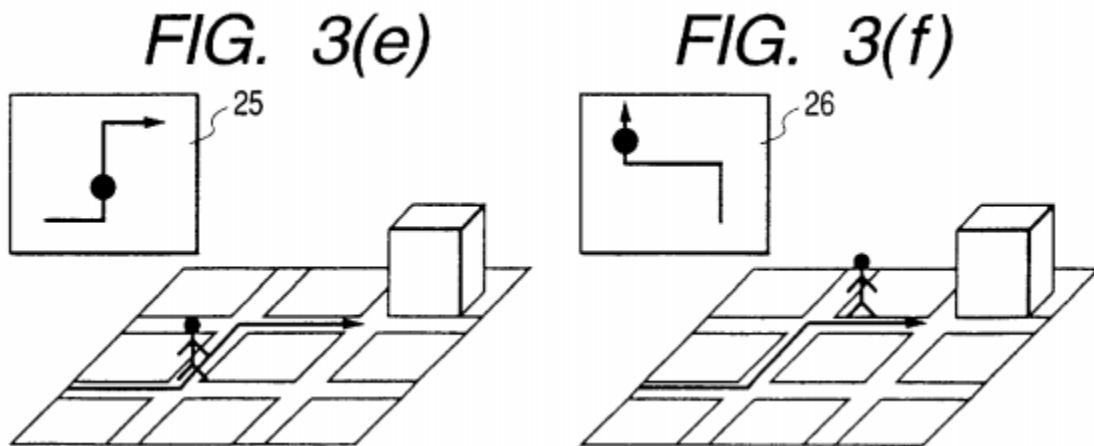


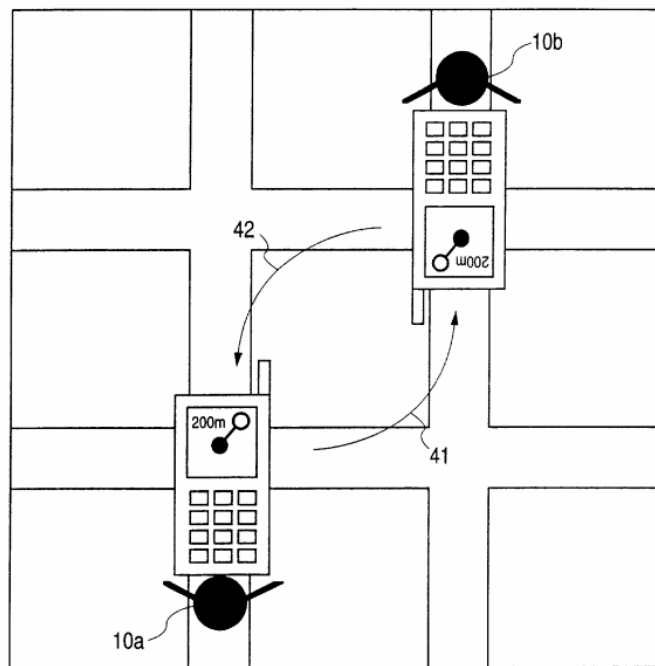
FIG. 3(d)





In the third embodiment, as illustrated in Fig. 5, the mobile terminal received location information from a partner's mobile terminal and displays a line to that partner's terminal.

FIG. 5



These allegedly novel and non-obvious methods of display are the alleged difference between the '498 Patent and the prior art, as all other elements of the claims were found by the Examiner to be found in, or obvious in view of, the prior art. *See* Section V.B, *infra*. (describing the Examiner's findings that the claimed "devices for getting [location/direction] information. . ." and other dependent claim limitations were present in the prior art). As described below, the navigation/positional information systems and display options described in the '498 Patent were well known for many years prior to July 12, 1999. ASUS-1003, § 5. For example, handheld GPS receivers and various mapping display options were all notoriously well known to POSITAs as of July 1999. *Id.*

Furthermore, the prior TravTek system was able to generate a route from the current location to the selected restaurant. The figure below shows the presentation of a route indicated by a bent line (shaded and indicated in the photo) indicating the specific route to take from the current location to the selected destination.

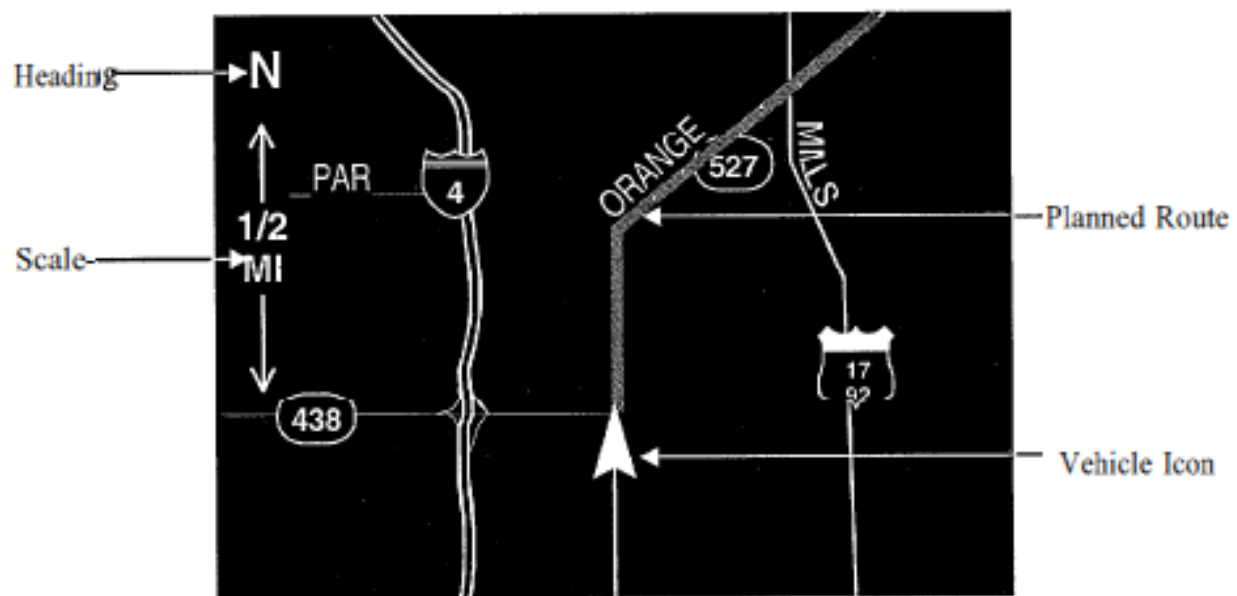
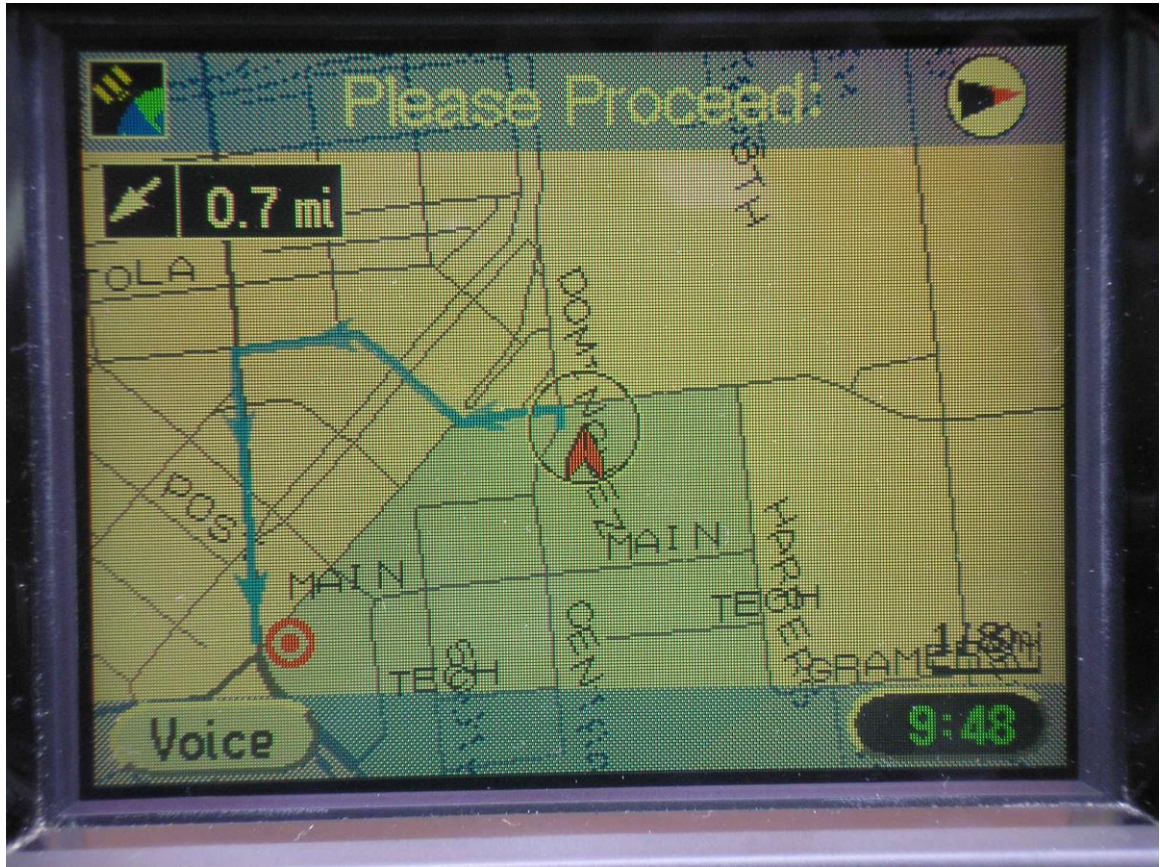


Figure 4. The TravTek Route Map displays the planned route as an overlay on the heading up map display.

(ASUS-1016, Fig. 4)

This same display approach has been used by nearly every moving map navigation system. For example, the 1996 Acura RL was one of the first production navigation systems sold in the United States. Dr. Andrews personally photographed display a 1996 Acura RL. ASUS-1003 ¶ 54. The image below shows a map display with the starting point (red arrowhead) and destination (red target) linked by a route that is indicated by a bent blue line with arrows to indicate the direction to go, the distance, and where to turn.



ASUS-1003, ¶ 54.

Thus a POSITA would also have been highly familiar with the concept of showing recommended routes by using a highlighted line that was bent to follow the specific course of roads from the starting location to the destination. § ASUS-1003, ¶¶ 54-55. In the event of a straight recommended route from the location to the destination, that route would be a straight arrow. *Id.*

B. The Prosecution History of the '498 Patent

In the initial rejection of the then-pending claims of the '498 Patent, the Examiner rejected several claims for lack of antecedent basis. ASUS-1002, p. 102.

The Examiner also rejected the pending claims, finding that US Patent No. 5,146,231 (“Ghaem”) taught a portable terminal with the function of walking navigation comprising a device for getting location information and a device for getting direction information denoting an orientation of the terminal, and various dependent limitations. *Id.* at 103. The Examiner had also rejected then-pending claims 3 and 8-10 as obvious in view of Ghaem, finding it would be obvious to enter a desired meeting location with a partner as a desired destination. *Id.* at 104.

Applicant later amended the three independent claims to add the following respective claim limitations:

- “wherein a direction and a distance of a destination from said present place are denoted with an orientation and a length of a line that is distinguished between starting and ending points to supply route guidance information as said walking navigation information”
- “wherein a local route around said present place is shown with a bent line and a direction of movement is shown with an arrow on said bent line to supply route guidance information as said walking navigation information”
- “wherein a full route from said starting point to said destination is shown with a bent line that is distinguished between starting and ending points and said present

place is shown with a symbol on said line to supply said route guidance information as said walking navigation information”

Id. at 135-37. In response, the Examiner allowed the claims, finding the above limitations were not disclosed in the prior art. *Id.* at 140-41.

VI. CLAIM CONSTRUCTION (37 C.F.R. §42.104(b)(3))

In an IPR, claim terms in an unexpired patent are interpreted according to their broadest reasonable interpretation (“BRI”) in view of the specification. 37 C.F.R. §42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). Under BRI standard, “words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). Thus, as required by the applicable rules, this Petition uses the BRI standard and, except as described below, applies the plain English meaning of the claim terms. Petitioners reserve all rights to take a different position with respect to claim construction in any other proceeding that does not rely on the BRI standard.

A. Indefiniteness

Petitioners have proposed constructions of various vague or means-plus-function claim terms because it is Petitioners’ burden to do so in an IPR proceeding.

However, there exist significant concerns regarding the definiteness of these claim terms. For example, as discussed below, the '498 patent's own definitions for "device for getting location information. . ." and "device for getting direction information. . ." terms recite as part of their alleged structures a general purpose processor, but do not disclose a corresponding algorithm that is capable of analyzing received data or sensor-measured data to calculate location information or direction information. See *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 519 (Fed. Cir. 2012).

Petitioners acknowledge that the Board is statutorily limited from instituting an IPR proceeding based on claims that patent claims are indefinite. *Cuozzo Speed Techs., 15 LLC v. Lee*, 136 S. Ct. 2131, 2141-42 (2016); 35 U.S.C. § 311(b). However, the Board has previously reviewed such claims for patentability under 35 U.S.C. §§ 102 and 103 while setting aside disputed issues of indefiniteness for a final decision. *Apple Inc. v. Evolutionary Intelligence, LLC*, IPR2014-00086, Paper 8 at 15 (PTAB Apr. 25, 2014); *see also Vibrant Media, Inc. v. Gen. Elec. Co.*, No. IPR2013-00172, Paper 50, at 9-11 (PTAB July 28, 2014). Solely for the purposes of this proceeding and while reserving the right to argue that these terms are indefinite in district court litigation, Petitioners have in some cases adopted Patent Owner's

constructions below as the broadest reasonable interpretation for terms that are properly indefinite under 35 U.S.C. § 112 under the *Phillips* standard.

1. “a device for getting location information denoting a present place of said portable terminal” and “a device for getting direction information denoting an orientation of said portable terminal” (Claims 1, 5, and 10)

The terms “a device for getting location information denoting a present place of said portable terminal” and “a device for getting direction information denoting an orientation of said portable terminal” are both means-plus-function limitation. These terms do not have an accepted and ordinary meaning in the art. ASUS-1003, §§ VII.C-D. They do not refer to any specific structure, and a person of skill in the art, would just consider “device” as a generic term like “means.” *Id.* The term “device” is a non-structural, nonce word that is tantamount to using the word ‘means’ because it does not connote sufficiently definite structure. *See, e.g., Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1350 (Fed. Cir. 2015) (en banc); *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006); *Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 705 (Fed. Cir. 1998). Patent Owner has previously conceded in district court litigation that these terms ought to be governed by § 112, ¶ 6. ASUS-1023, p. 2.

The 498 Patent provides an express definition of these disputed terms. In Figure 10, the 498 Patent illustrates a “device for getting location information” 77

and a “device for getting direction information” 78. The patent specification expressly defines the structures of these two devices:

For example, such a wireless antenna as a GPS, a PHS, etc., *as well as* an infrared ray sensor is used to measure location information.

ASUS-1001 at 4:9-11.¹

The device for getting location information 77 is provided with such a wireless antenna, a GPS, a PHS, or the like; such a data receiver as an infrared ray sensor, or the like; *and* a control unit for analyzing received data, thereby calculating location information.

ASUS-1001 at 9:39-44.

The device for getting direction information 78 is provided with a compass, a gyro, such a sensor as a clinometer, *and* a control unit for analyzing sensor-measured data, thereby calculating direction information.

Ex.1001, 9:44-47.

The “device for getting location information” therefore requires a wireless receiver (such as a wireless antenna, a GPS, or PHS, etc.), *and* an infrared ray sensor, *and* a control unit “for analyzing received data, thereby calculating location information.” ASUS-1003, §§ VII.C-D. Furthermore, “the device for getting direction information” must contain at least one of each of these three elements

¹ Throughout this Petition, any emphasis in block quotes is added.

(compass, gyro, and clinometer) and a control unit for analyzing sensor-measured data. *Id.*

The definitions of these terms in the Patent illustrate that “analyzing received data, thereby calculating location information” and “analyzing sensor-measured data, thereby calculating direction information” are required sub-functions of the “getting location information . . .” and “getting direction information . . .” terms, respectively. However, the patent specification provides no guidance to a POSITA in terms of algorithms or methods to use to analyze that received data, analyzing sensor-measured data, calculating location information, or calculating direction information. *Id.* ¶¶ 73-74, 83-84.

A control unit is claimed as part of the structure of both terms and is a general processor. ASUS-1003, ¶¶ 73, 83. As such, the patent specification must disclose an algorithm for performing each recited function. In district court litigation, Petitioners have argued that no corresponding algorithms for these terms are disclosed in the patent specification and that these terms are both therefore indefinite. ASUS-1023, p. 1.

However, Patent Owner has suggested in that litigation that the algorithms set forth in 5:48-56 or Fig. 2 of the Patent specification constitute the required algorithms for “analyzing received data to calculate location information,” and that

the algorithms set forth in 4:14-29, 5:56-62, and Fig. 2 of the Patent specification constitute the required algorithms for “analyzing sensor-measured data to calculate direction information.” ASUS-1023, p. 2.

While Petitioners do not agree that these identified “algorithms” constitute sufficient structure for the functions of “getting direction information denoting an orientation of said portable terminal” or “getting location information denoting a present place of said portable terminal,” including the respective sub-functions of “analyzing sensor-measured data, thereby calculating direction information,” or analyzing received data, thereby calculating location information,”² Petitioners have applied Plaintiff’s proposed algorithms as the claimed structure for purposes of this IPR, as the alleged BRI.

Accordingly, for purposes of this IPR only, Petitioners propose the following BRI constructions of these terms: “a device for getting location information denoting a present place of said portable terminal” should be construed as “a wireless or cellular antenna, **OR** a GPS, **OR** a Personal Handyphone System; **AND** an infrared

² For example, Fig. 2’s only disclosure of getting location information or getting direction information is boxes 106 and 107, which simply say “Get Location Information” and “Get Direction Information.”

ray sensor; **AND** a control unit for analyzing received data, with the control unit calculating location information as disclosed in in 5:48-56, and Fig. 2” and “getting direction information denoting an orientation of said portable terminal” be construed as “a compass, a gyro, a clinometer, **and** a control unit for analyzing sensor-measured data, thereby calculating direction information denoting an orientation of said portable terminal, with the control unit calculating direction information as disclosed in in 4:14-29, 5:56-62, and Fig. 2,” if the Board finds these terms are definite.

If the Board finds that Patent Owner’s proposed identifications of structure apply as the BRI, Petitioners’ prior art references meets both of these limitations as long as each has a wireless antenna and a compass. *See* ASUS-1023, p. 2.

2. “walking navigation,” “walking navigation information,” and “said walking navigation information” (Claims 1, 5, and 10)

All independent claims contain the terms “walking navigation” and “said walking navigation information.” While these term are each indefinite,³ for purposes

³ For example, “said walking navigation information” lacks antecedent basis, and there is no means provided for a POSITA to differentiate “walking navigation information” from normal “navigation information.” ASUS-1003, § VII.E.

of this IPR, Petitioners have applied Patent Owner’s proposed construction of these terms, which corresponds to a district court’s construction of these terms for a related patent and is therefore the BRI for purposes of this petition.

As one court previously construed the terms “walking navigation” and “walking navigation information” as “information to navigate a user who is walking,” Petitioners have applied that construction in their analysis. For the term “said walking navigation information,” which lacks antecedent basis (at least because no walking navigation information has been previously introduced in the claim, and walking navigation information differs from the act of walking navigation), Petitioners have construed the term for purposes of the IPR as simply “walking navigation information.”

3. “route guidance information” and “neighborhood guidance information” (Claims 1, 5, 8, and 10)

All independent claims contain the terms “route guidance information” and claim 8 includes the term “neighborhood guidance information.” Petitioners believe that these terms are both indefinite under *Phillips* (for reasons described by Mr. Andrews at ASUS-1003, § VII.F), but for purposes of this IPR, we have attempted to apply Patent Owner’s prior proposed construction of these terms, which is the plain and ordinary meaning, as the BRI of these terms.

VII. THERE IS A REASONABLE LIKELIHOOD THAT PETITIONER WILL PREVAIL WITH RESPECT TO AT LEAST ONE CLAIM OF THE '498 PATENT

The subject matter of the Challenged Claims is disclosed and taught in the prior art as explained below. The combinations utilized in each of the raised Grounds render obvious each of the Challenged Claims pursuant to 35 U.S.C. §103 and provide a reasonable likelihood that the Petitioner will prevail on at least one claim. 35 U.S.C. §314(a).

Each of the arguments below is made from the standpoint of a person of ordinary skill in the art (“POSITA”) in the field of the '498 Patent. Specifically, a POSITA, at the time of the priority date for the '498 Patent, would have at least a bachelor's degree in computer engineering or electrical engineering (or equivalent degree/experience) with at least two years of experience in navigational and/or electronic display systems. ASUS-1003, § VIII. In addition, the applied prior art reflects the appropriate level of skill at the time of the claimed invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

A. Priority Date

The '498 patent issued based off a U.S. application filed on July 11, 2000, and claims priority to a Japanese patent application filed on July 12, 1999. *See* ASUS-

1001. The earliest effective U.S. filing date of the claims of the ‘498 Patent is July 11, 2000.

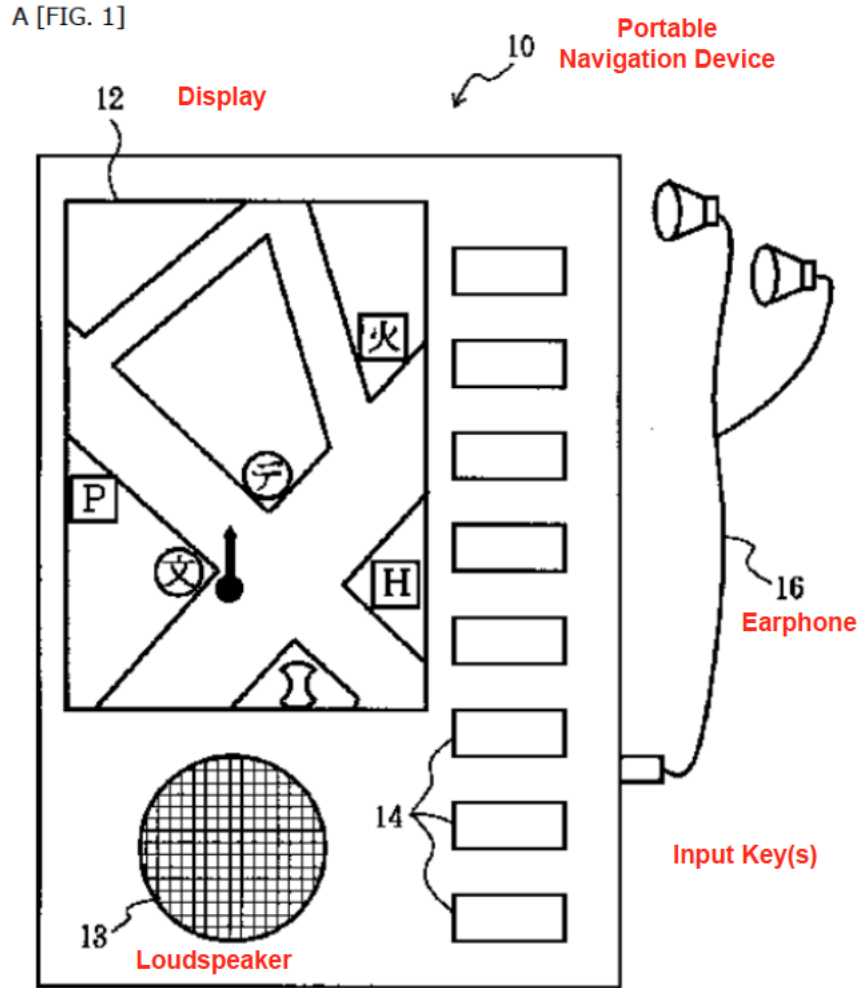
B. Prior Art

1. Japanese Patent H07-280583 (“Suzuki”)

Japanese Patent H07-280583 (“Suzuki”) was published on October 27, 1995 from an application filed on April 13, 1994. ASUS-1004 (cover); ASUS-1005 (cover). This reference is therefore prior art under at least 35 U.S.C. § 102(b). Petitioners have obtained a certified English translation of this reference. *See* ASUS-1005; *see also* ASUS-1006 (Declaration of Noah Oskow certifying the translation of this reference).

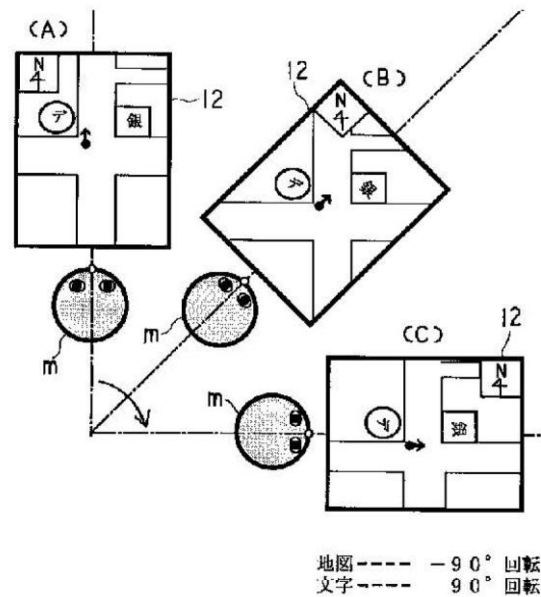
Suzuki describes a portable navigation system that orients the display according to the “actual azimuth” of the device. ASUS-1005, at Abstract. A POSITA would understand that an “azimuth” as described in Suzuki reflects a horizontal direction expressed as the angular distance between the direction of a fixed point (e.g., true north) and the direction of the device. ASUS-1003 ¶¶ 107.

Suzuki describes that the portable navigation device 10, illustrated in Figure 1 below with annotation, is a handheld device. ASUS-1005, [0007]; Fig. 1.



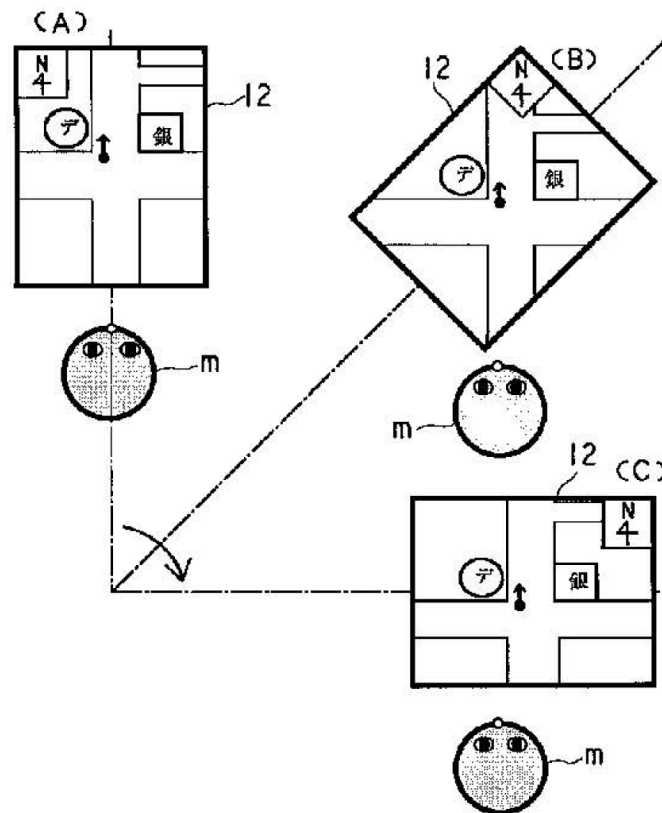
Suzuki describes that conventional navigation systems designed for people who are traveling on foot (i.e. walking), have limitations because the display is drawn with the map north at the upper part of the screen (what is known in the art as a “north-up” display). As a result, the user may have a difficult time relating the map drawn on the screen to the actual scene they are looking at on the road. ASUS-1005, [0002]-[0003].

Suzuki describes that the subject invention improves on this type of walking navigation system by orienting the display so that the map drawn on the screen corresponds to the actual scene, that is, the map image is rotated relative to the display screen, so that the map corresponds to the scene the user is seeing (what is known in the art as a “heads-up display”). ASUS-1005, [0020], [0023], [0027]. This rotating display characteristic of the device is illustrated in Figure 8,⁴ reproduced below.

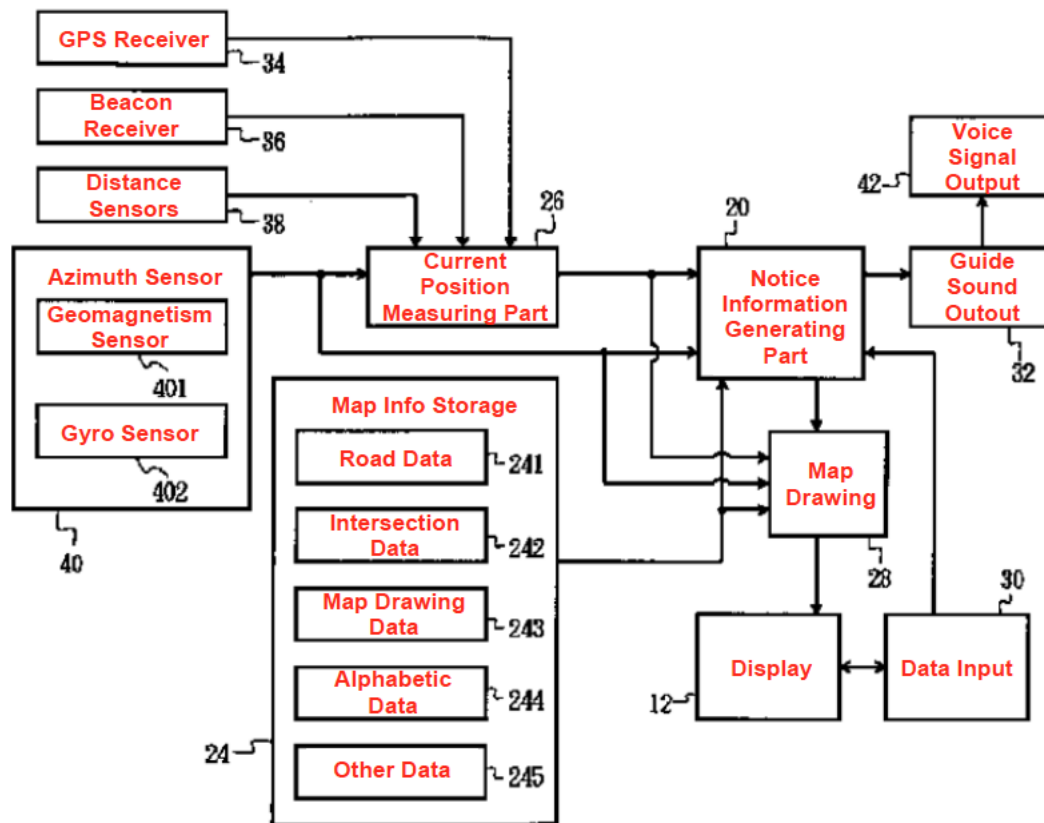


⁴ Wherever the text of the figure is not meaningful to an argument, Petitioners have used the clearer Japanese figures from ASUS-1004 for clarity because Figures from the certified translation ASUS-1005 are slightly blurry.

Suzuki also notes that, if the user is facing one direction, then as they rotate the device, the display will rotate relative to the device so that the map on the display remains aligned with the scene the user is looking at. ASUS-1005, [0024]. This is illustrated in Figure 9, reproduced below:



Suzuki provides a detailed block diagram of the portable navigation system in Figure 2, reproduced with annotation below.



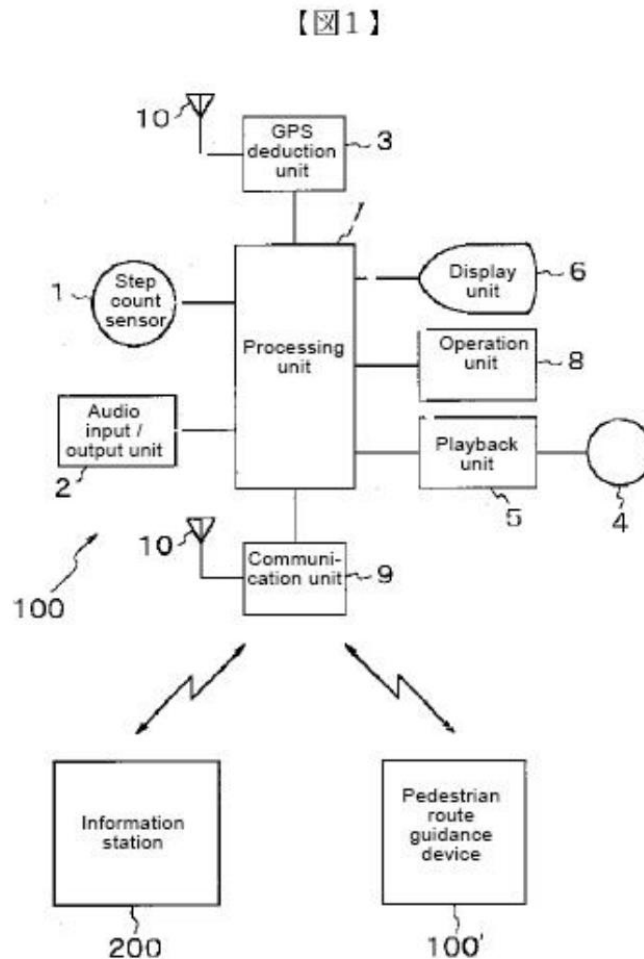
As can be appreciated from the figure, this device includes GPS Receiver 34, Beacon Receiver 36, and distance sensors 38, and azimuth sensor 40. ASUS-1005, [0012]. These sensors feed data to the current position measuring part 26, which determines the position of the device. *Id.*

2. Japanese Patent Number H10-170301 (“Nosaka”)

Japanese Patent H10-170301 (“Nosaka”) was published on June 26, 1998 from an application filed on December 9, 1996. ASUS-1007 (cover); ASUS-1008 (cover). This reference is therefore prior art under at least 35 U.S.C. § 102(b).

Petitioners have obtained a certified English translation of this reference. *See* ASUS-1008; *see also* ASUS-1009 (Declaration of Noah Oskow certifying the translation of this reference).

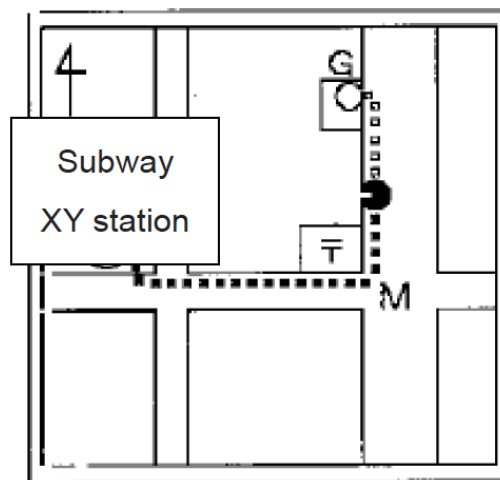
In connection with Figure 1, reproduced below with annotation, Nosaka describes a portable navigation device for a walker (i.e. for providing “walking navigation”). ASUS-1008, at [Solution], [0019], [0038].



Nosaka discloses that the pedestrian navigation device in Figure 1 includes: Step count sensor 1, audio I/O unit 2, GPS unit 3, information storage unit 4, playback unit 5, display unit 6, processing unit 7, operation unit 8, communication unit 9, and, antenna 10. ASUS-1008, [0019].

Nosaka further describes that the step sensor 1 is implemented using a three axis accelerometer. ASUS-1008, [0072]. Nosaka describes that when a destination has been entered, the pedestrian navigation device provides route guidance to the user by displaying the current location, the destination, and the specific route between them, as shown in Fig. 8 below. ASUS-1008, [0069].

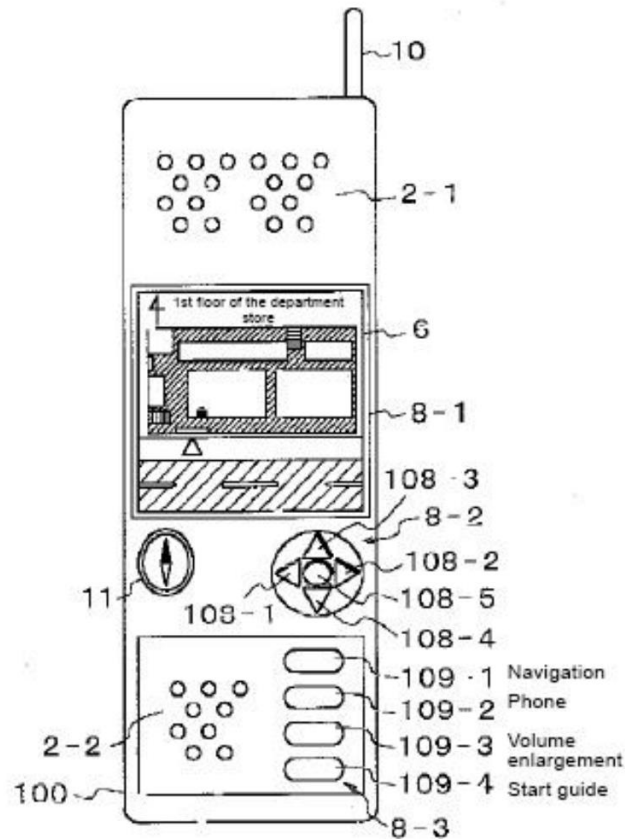
【FIG. 8】



Nosaka also describes that the map is displayed in a “north up” fashion, and that, because the orientation of the device may change, a compass (termed a “magnet” in the translation) is provided to help the user properly orient themselves.

ASUS-1008, [0045], [0071]. Magnet 11 (*i.e.*, a compass) and the display are shown in Figure 2, reproduced below with translations.

【FIG. 2】



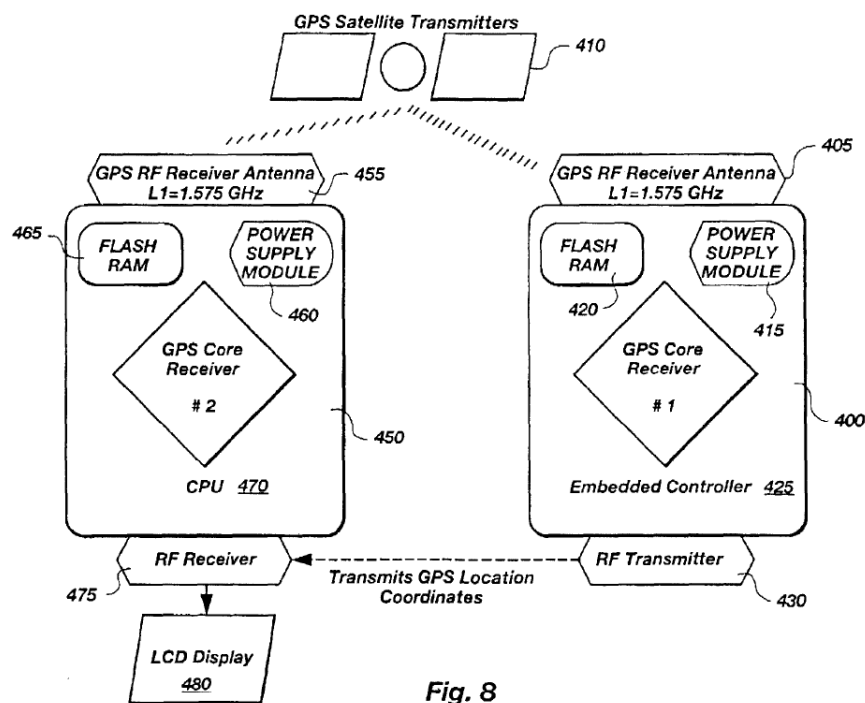
Nosaka also describes that the pedestrian navigation system can provide directions with elevation (for example, the floor of a building). ASUS-1008, [0067], [0085].

3. U.S. Patent No. 5,781,150 (“Norris”)

U.S. Patent No. 5,781,150 (“Norris”) issued on July 14, 1998 from an application filed on October 13, 1995. ASUS-1010 (cover). Norris therefore qualifies as prior art under at least 35 U.S.C. §§ 102(a), (b), and (e).

Norris describes, “A system of GPS devices which receive civilian GPS signals and provide an intuitive graphical interface for displaying the relative position of GPS devices in relation to each other.” ASUS-1010, Abstract.

Norris further describes that one device transmits its location information, and other devices receive this information. *Id.* The receiving device(s) then display the position of the transmitting device on the receiving device display. *Id.* The orientation of the receiving device is used to rotate the display so that the relative position of the transmitting terminal is always displayed in such a way that the directional indicator, indicating the direction to the transmitting terminal always points in the direction of the transmitting terminal. *Id.* Norris illustrates the basic system in Figure 8, reproduced below (as translated).



This figure illustrates two terminals (400 and 450), each equipped with a GPS receiver (items 405, and 455). An RF transmitter on terminal 400 transmits “GPS Location coordinates” to terminal 450. Terminal 450 then displays the location of terminal 400 on the LCD display 480. ASUS-1010, 9:24-50.

Norris describes that the user can select which terminal to track by selecting the transmission frequency band associated with that particular terminal. ASUS-1010, 6:49-57; 9:55-65.

Since the device will allow the user to track the distance and direction to the other terminal, for example a golf hole with a device as described, the tuner represents an input device for inputting a destination.

Norris describes the terminal includes a compass to provide directional orientation information, so that as the user of one terminal turns in a circle, the display (arrow 354, indicating a direction to the other terminal) will always be oriented so that it points in the actual direction of the other terminal. ASUS-1010, 7:21-44. This is illustrated in Figure 5C reproduced below.

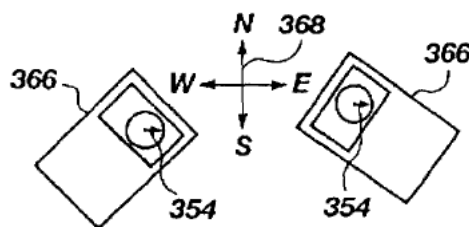


Fig. 5C

Norris also describes that the distance to the other terminal can be displayed on the display screen. ASUS-1010, 7:48-53. Norris also describes a “grid” display wherein the position of the other terminal is displayed overlaid on a “grid” display of concentric circles relating to distance and angle from the receiving terminal. ASUS-1010, 8:7-21. This is illustrated in Figure 6 of Norris, reproduced below.

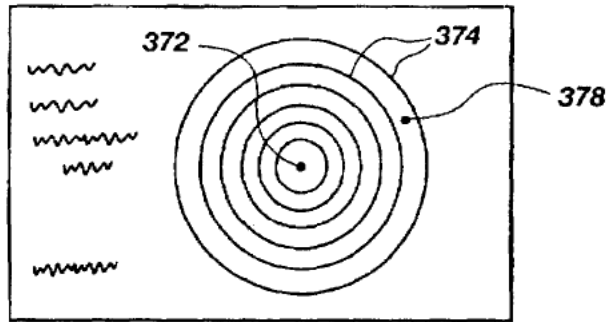


Fig. 6

The angular elements of this “grid” display, while not shown in Figure 6, are indicated in Fig. 5B, which is an enlargement of a portion of Figure 5A. In Fig. 5B the angular direction in degrees is indicated by tick marks that represent radial lines drawn from the center of the (polar coordinate) grid to provide angular information for the arrow 358. Figure 5A and 5B are reproduced below for reference.

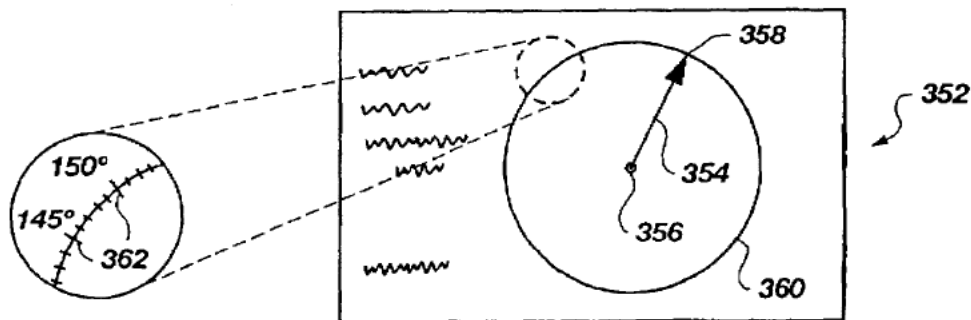


Fig. 5B

Fig. 5A

4. U.S. Patent No. 5,592,382 (“Colley”)

Colley issued on January 7, 1997 from an application filed March 10, 1995. Colley qualifies as prior art under at least 35 U.S.C. §§ 102(a), (b), and (e).

Colley is primarily directed to a navigation display concept that a POSITA would understand could be used with a variety of different types of navigation systems (for example, for driving, hiking, or horseback riding). ASUS-1011, 2:6-14, 5:39-42; ASUS-1003 § IX.A.iv..

Colley describes a “directional steering and navigation indicator” that provide navigation and guidance toward a destination on a display. ASUS-1011, Title, Abstract. Colley describes that the device makes use of navigation equipment such as “GPS receiver or LORAN receiver, as well as display devices and/or electronic charts, in conjunction with a programmable computer to drive the displays” to provide position, heading course over ground (COG), and speed, as well as to allow the indication of the destination, the direction of the user’s travel, and other waypoints on the display screen. ASUS-1011, 3:31-38, 3:49-51, 6:16-17.

A LORAN receiver (for LOng RANGE Navigation) uses low-frequency radio transmissions, transmitted by radio beacons, to determine the device’s position. ASUS-1003 ¶ 139. Low-frequency radio transmission are typically less susceptible

to jamming and interference than GPS signals (which operate in microwave frequencies). *Id.*

Colley also describes a display, as illustrated in Figure 2, and reproduced below.

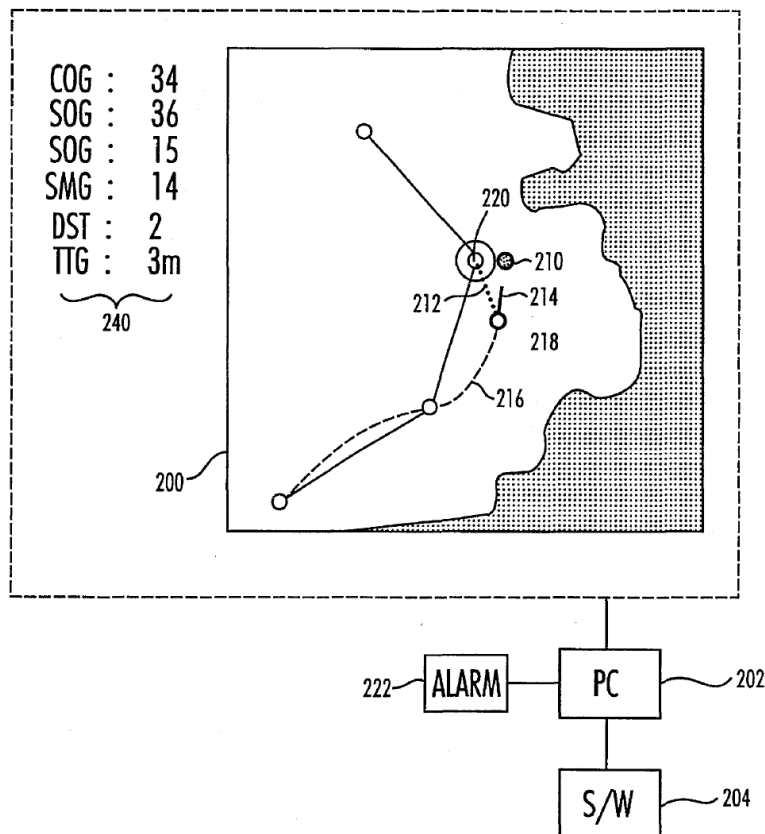


FIG. 2

Colley describes the elements of the display as follows at ASUS-1011, 3:40-51. Colley's display shows the position of the origin or starting point (i.e. the prior waypoints), the position of the next destination (220) (either the final destination, or waypoint destinations, if any), the current position (218) and heading (214, and

COG), the distance between the current position and the next destination (DST), and the direction between the current position and the next destination (BTD indicator line 212), as well as the route from the starting point to the destination (the ensemble of waypoints connected by the bent line in the figure). *Id.*

Colley also describes that prior art systems that, for example illustrate the position and course on a grid display were well known. ASUS-1011, 2:46-48.

C. Motivations to Combine

Mr. Andrews has opined that it would be obvious to combine each of the suggested sets of references as disclosed in Grounds 1-6, and that a POSITA would have been motivated to do so. ASUS-1003, §§ IX.B.ix, IX.C.ix, IX.D.viii, IX.E.xiv, IX.F.ix, and IX.G.viii. Each of the combined references describe portable navigation devices specifically intended to provide directional guidance to a user who is walking, and each set of combined references provide directional guidance intended to direct the user to travel in a particular direction to reach the destination. As a result, a skilled artisan implementing one system in each Ground would have understood that the systems described in the other combined art were intended to provide similar benefits, and this would have been aware of each of the combined references. *Id.*

1. Ground 1: Claims 1-3, and 5-8 of the '498 Patent are rendered obvious by Suzuki in combination with Nosaka under 35 U.S.C. § 103.

While Suzuki's rotating map display and directional guidance is superior to the compass supported north-up display of Nosaka, Nosaka provides a unique approach to guiding the user through a route involving elevation changes, such as guiding the user on a route involving multiple floors of a building. In addition, Nosaka describes a more complete route guidance display for walkers that indicates not only the direction to walk, but also the specific path to take. ASUS-1008, [0003], [0007], [0081] Fig. 8. A POSITA would this have appreciated that adding these guidance features to the system of Suzuki would provide a more useful guidance capability that would be more effective at providing route guidance in situations where the user was likely to be walking, for example in complicated city streets, or inside multi-story buildings. Thus, a POSITA would have been motivated to make such a combination. ASUS-1003, § IX.B.iv. A POSITA would also be motivated to use Nosaka's triaxial gyro in Suzuki to more accurately determine the orientation of the portable terminal. *Id.*

Moreover, this improvement of Suzuki would involve nothing more than the addition of one familiar element (e.g. Nosaka's enhanced display) to another (e.g., Suzuki's directionally sensitive map display. ASUS-1003, ¶ 243. This combination

would produce the predictable result of providing a more complete and useful display for pedestrian navigation. *Id.* Further, this combination would simply represent an arrangement of old known elements with each performing the same function it had been known to perform and would yield no more than one would expect from such an arrangement. *Id.*

2. Ground 2: Claims 1-3, and 5-8 of the '498 Patent are rendered obvious by Suzuki in combination with Colley under 35 U.S.C. § 103.

Furthermore, Colley specifically describes that it is an improved display that manufacturers can adapt to a wide variety of navigational applications, including systems like Suzuki, to provide a more effective display. ASUS-1011 at 5:24-30 (“For ease of installation, manufacturers may desire to retrofit embodiments of the present invention into existing display schemes. . .”). While Suzuki’s rotating map display and directional guidance indicate the direction to the destination, the display described by Colley not only indicates the direction to the destination, but also indicates the route to be taken and the direction the user is to travel to get to the route, should their path deviate. A POSITA would understand that adding this additional guidance capability of Colley to Suzuki would render the system more effective at guiding the user to a destination because it allows a user to follow navigation cues directing them to waypoints along the way to the final endpoint,

even if they stray from the original recommended route. ASUS-1003, § IX.C.ix, ¶¶ 330-333. Moreover, this improvement of Suzuki would involve nothing more than the addition of one familiar element (e.g. Colley's enhanced navigational display) to another (e.g., Suzuki's directionally sensitive rotating map display). *Id.*

A skilled artisan seeking to improve on Suzuki's display for walking navigation would have understood that using the display system of Colley would provide more directly useful information to help guide the user to the destination. For example, Colley describes showing multiple waypoints along the route, and Colley also indicates the user's current heading and the heading they should be taking to reach the next waypoint or destination.

This combination would produce the predictable result of providing a more complete and useful display for pedestrian navigation. Further, this combination would simply represent an arrangement of old known elements with each performing the same function it had been known to perform and would yield no more than one would expect from such an arrangement.

3. Ground 3: 1-3 and 5-7 of the '498 patent are rendered obvious by Suzuki in combination with Colley and Ellenby under 35 U.S.C § 103.

First, for the reasons described above in connection with Ground 2 it would be obvious to combine Suzuki and Colley. Both Suzuki and Colley describe a device

for getting direction information (for example, using a gyro and/or a compass to determine a device's heading). However, neither explicitly suggest using a three-axial gyroscope or an inclinometer to also determine the tilt or roll of the device. Ellenby specifically describes how to determine the "attitude" (including the heading, tilt, and/or roll) of the handheld device by using a compass, multiple piezo-electric gyros, and/or a triaxial magnetometer incorporating a biaxial electrolytic inclinometer. ASUS-1022, 12:65-13:10. A POSITA would understand that these additional elements were well known in the art of handheld devices to allow more accurate determination of the orientation of a device and would have been motivated to further include the additional gyros, inclinometer, or triaxial magnetometer disclosed in Ellenby in the combined system of Suzuki and Colley in order to more accurately display to the user their current heading (for example, when heading uphill). ASUS-1003, § IX.D.viii. A POSITA would have expected success when adding these familiar elements to the combined elements of Suzuki and Colley because it would simply represent an arrangement of old known elements to allow more specific identification of the orientation of the handheld device, with each element performing the same function it had been known to perform and would yield no more than one would expect from such an arrangement. *Id.* ¶ 440.

4. Ground 4: Claims 1, 3-5, 7-11, and 13 of the '498 patent are rendered obvious by Norris in combination with Colley under 35 U.S.C § 103.

Both Norris and Colley describe portable devices that provide directional guidance to a destination using a pointer or arrow. As disclosed in the Ground 2 below and in Norris Figs. 5A-B, Norris describes a handheld device that displays the location of the transmitting unit on the display screen with an indication of the relative direction and distance to that unit.

Colley describes a display technique, applicable to a variety of navigation applications, wherein the user is provided directional or steering information so that they can know what direction to travel to reach their destination. Thus, both systems provide the same type of directional indication to guide a user to a destination.

Both Norris and Colley also describe providing distance to the destination as part of the display. A POSITA would have been motivated to include the route indication display described by Colley in the system of Norris in order to provide a more complete and useful guidance display. ASUS-1003, § IX.E.xiv. As described, Norris indicates the current direction to the destination, but it does not expressly indicate the user's current heading and the heading they should take at the same time, nor does it explicitly indicate the distance to the destination. Colley provides both of these indications, and thus would represent an improvement to the display of Norris.

Colley suggests improving existing systems, for example systems like Norris, with his more effective display. ASUS-1011 at 5:24-30. A skilled artisan seeking to improve on Norris's display approach (using a simple directional arrow) would have understood that using the Colley's display system would provide more directly useful information to help guide the user to the destination. Colley describes showing multiple waypoints along the route and Colley also indicates the user's current heading and the heading they should be taking to reach the next waypoint or destination. ASUS-1003, § IX.E.xiv.

5. Ground 5: Claims 1-2, 5-6, 8, 10, and 12, of the '498 Patent are rendered obvious by Norris in combination with Nosaka and Colley under 35 U.S.C. § 1003.

First, for the reasons described above in connection with Ground 3 it would be obvious to combine Norris and Colley. In addition, a POSITA would have been motivated to further apply features of the navigation display described by Nosaka to the pedestrian navigation device of Norris, and in doing so, the resulting combination would have rendered additional claims of the '498 patent obvious. ASUS-1003 § IX.F.

Furthermore, while Norris' rotating map display and directional guidance is superior to the compass supported North-up display of Nosaka, Nosaka provides a tri-axial gyro and a unique approach to guiding the user through a route involving

elevation changes, such as guiding the user on a route involving multiple floors of a building. A POSITA would thus have appreciated that adding these features to the combined system of Norris and Colley would provide a more useful guidance capability. ASUS-1003, § IX.F.ix. For example, Nosaka teaches that when a pedestrian carries a device, the devices are not necessarily held in a fixed orientation, and the devices may be held upside down or with left and right sides reversed. ASUS-1008, [0003]. Therefore, Nosaka teaches that it would be desirable to modify such devices with a three-axis accelerometer to make the device suitable for carrying and for use as a route guiding device at the same time. *Id.* [0008], [0013], [00087].

Moreover, this improvement of Norris and Colley would involve nothing more than the addition of one familiar element (e.g. Nosaka's enhanced display) to another (e.g., Norris' directionally sensitive map display and Colley's enhanced guidance display). This combination would produce the predictable result of providing a more complete and useful display for pedestrian navigation.

6. Ground 6: Claims 1-2, 5-6, 8, 10, and 12, of the '498 Patent are rendered obvious by Norris in combination with Colley and Ellenby under 35 U.S.C. § 1003.

As described in Ground 4, a POSITA would have been motivated to combine Norris and Colley. Both Norris and Colley describe a device for getting direction information (for example, using a gyro and/or a compass to determine a device's

heading). However, neither explicitly suggest using a three-axial gyroscope or an inclinometer to also determine the tilt or roll of the device. As described for Ground 3, Ellenby specifically describes how to determine the “attitude” of the handheld device by using a compass, multiple piezo-electric gyros, and/or a triaxial magnetometer incorporating a biaxial electrolytic inclinometer. ASUS-1022, 12:65-13:10. A POSITA would understand that these additional elements were well known in the art of handheld devices to allow more accurate determination of the orientation of a device and would have been motivated to further include the additional gyros, inclinometer, or triaxial magnetometer disclosed in Ellenby in the combined system of Norris and Colley in order to more accurately display to the user their current heading (for example, when heading uphill). ASUS-1003, § IX.G.viii. A POSITA would have expected success when adding these familiar elements to the combined elements of Norris and Colley because it would simply represent an arrangement of old known elements to allow more specific identification of the orientation of the handheld device, with each element performing the same function it had been known to perform and would yield no more than one would expect from such an arrangement. *Id.* ¶ 844.

D. Ground 1: Claims 1-3 and 5-8 Are Unpatentable Under 35 U.S.C. §103 as Obvious over the Combination of Suzuki and Nosaka⁵

1. “A portable terminal, with the function of walking navigation” (Claims 1 and 5).

Suzuki describes a handheld portable navigation device for walking navigation. ASUS-1003, § IX.B.ii.a. For example:

The portable navigation device 10 has a weight and a size enough to be able to be placed on the palm of the hand, ...

(ASUS-1005, [0007])

Suzuki describes that the display of the device is configured to support a “carrier/wearer” (i.e., a user) who is walking. ASUS-1005, [0024].

Nosaka also describes a portable navigation system specifically intended for a pedestrian. ASUS-1003, § IX.B.ii.a. For example:

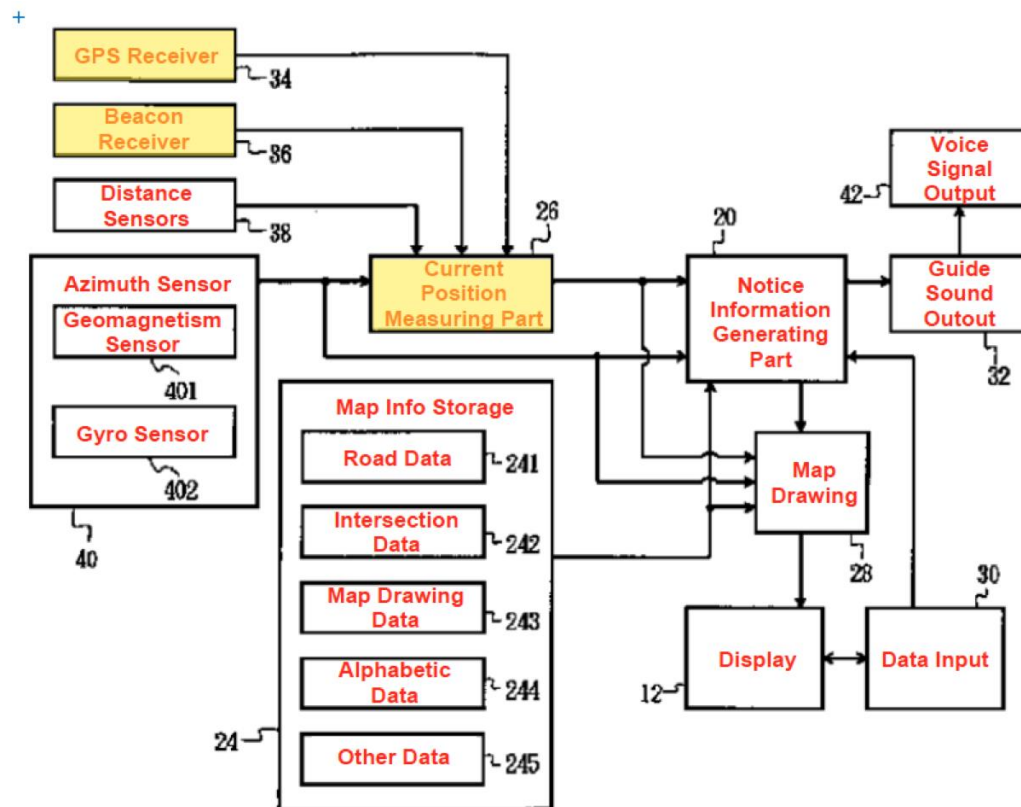
The invention in question relates to a route guidance device, and more particularly to *a portable pedestrian route guidance device*.

(ASUS-1008, [TECHNICAL FIELD])

⁵ Mr. Andrews has provided a claim by claim analysis of this Ground at ASUS-1003 § IX.B.

2. “a device for getting location information denoting a present place of said portable terminal” (Claims 1 and 5)

Suzuki describes a device for getting position information, i.e., for determining the present location or position of the device. ASUS-1003, § IX.B.ii.b. For example, as illustrated in Figure 2, reproduced below with translated annotation and with added highlighting, Suzuki describes a GPS receiver 34 and a beacon receiver 36 that receives position information from a beacon arrange on the road, and the current position measurement unit 26 which calculates location information as claimed using data from both devices. ASUS-1005, [0012]. Suzuki also describes a current measuring unit 26 that can measure position independently from the GPS receiver 34 and the beacon receiver 36, using dead reckoning navigation (e.g., by measuring the steps of the user after a last known position). ASUS-1005, [0014].



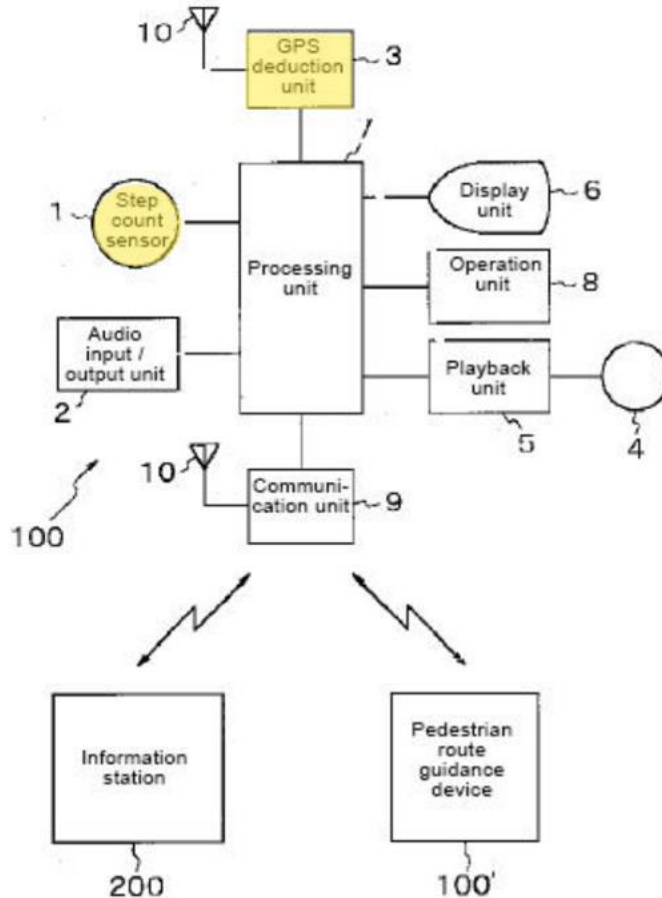
To the extent that it is determined that the device for getting location information must include an “antenna, a GPS, a PHS, or the like; such a data receiver as an infrared ray sensor, or the like; and a control unit for analyzing received data” as described in the ‘498 patent, Suzuki discloses a GPS receiver, which a POSITA would understand necessarily also includes an antenna, and includes a beacon receiver, which a POSITA would recognize as a “data receiver as an infrared ray sensor, or the like”, and it includes the current position measuring unit, which a POSITA would have understood to be a “control unit for analyzing received data”. ASUS-1003, ¶ 162. Thus, Suzuki describes all of the elements described by the ‘498

patent as being associated with claimed “a device for getting location information denoting a present place of said portable terminal.”

Nosaka also describes a device for finding the location of the pedestrian navigation system. ASUS-1003, § IX.B.ii.b. For example, in connection with Figure 1, reproduced below with annotation, Nosaka describes a GPS receiver and a “step sensor” that determines position using steps (sensed by an accelerometer), and a directional sensor to determine position when GPS is unavailable. ASUS-1008, [0003], [0019].

【FIG. 1】

【図1】



Nosaka also describes that the GPS receiver uses the device antenna to detect the current position of a pedestrian. ASUS-1008, [0019].

3. “a device for getting direction information denoting an orientation of said portable terminal” (Claims 1 and 5)

Suzuki discloses an “azimuth sensor” that includes a geomagnetic sensor (i.e. a compass) and a gyro sensor. ASUS-1003, § IX.B.ii.c. For example:

The azimuth sensor 40 has a geomagnetism sensor 401 for detecting the orientation of the portable navigation device 10 by detecting the geomagnetism, and a gyro sensor 402 such as a gas rate gyroscope or a fiber optic gyroscope for detecting the rotational angular velocity (ASUS-1005, [0012])

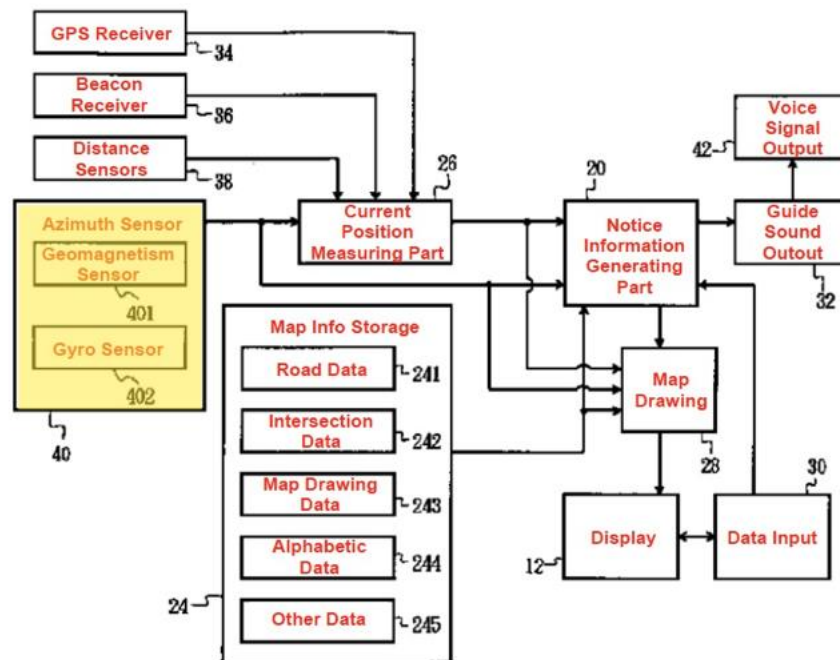
Here, the two types of sensors are used because the geomagnetic sensor 401 detects the geomagnetism of the mobile navigation device 10 itself, the structure made of iron, such as a bridge, or the like. This is because the magnetic field is detected and the direction detection may be erroneous in some cases. Accordingly, in the azimuth sensor 40, an azimuth detection is performed using a gyro sensor 402 which is not usually influenced by an external magnetic field, and an error of the detected value is corrected on the basis of a detection value of the geomagnetic sensor 401, whereby accurate azimuth detection (ASUS-1005, [0013])

The azimuth data detected by the direction sensor 40 is supplied not only to the current position measurement unit 26 but also to the guide information generation unit 20 and the map drawing unit 28. The distance sensor 264 detects the acceleration of the portable navigation device 10, for example, and obtains the moving distance by integrating twice. Although the current position measuring unit 26 can measure the position independently from the GPS receiver 34 and the beacon receiver 36, in a place where it is impossible to receive from a GPS satellite or a beacon, the current position measuring unit 26 measures

the distance sensor 264 and the direction sensor. The absolute position is calculated by dead reckoning navigation using 263.

(ASUS-1005, [0014])

These devices are also illustrated in Figure 2 of Suzuki, reproduced with translated annotation and added highlighting below.



Nosaka also describes a device for determining the direction of the device.

ASUS-1003, § IX.B.ii.c. For example, Nosaka describes that the device includes a compass 11 for determining the direction of the device:

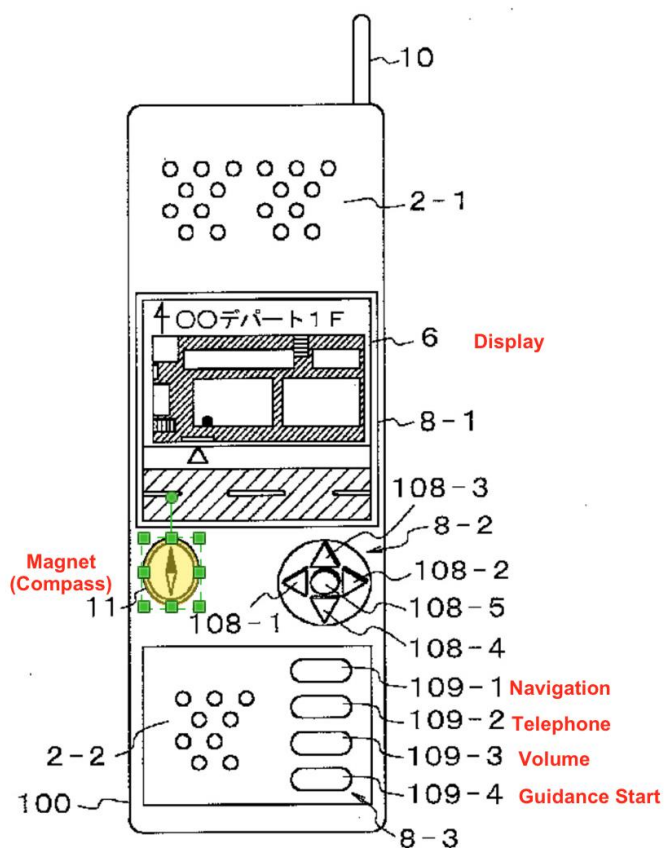
The user moves pedestrian route guiding device 100 so that the direction of the magnet coincides with the orientation of the direction mark on the map to confirm the traveling direction and starts walking.

(ASUS-1008, [0071])

Nosaka also describes a three-axis accelerometer 22 that is used to determine the direction the user is moving. For example:

That is, in this embodiment, *a three-axis acceleration sensor 22* for detecting vibrations in each direction about three axes of the X axis, the Y axis, and the Z-axis so that the vibration due to the walking of the pedestrian can be detected in all directions is divided into the number of steps. It is used for sensor 1. *Here, the X axis, the Y axis, and the Z axis are not based on the ground but are relative three-dimensional axes.*

(ASUS-1008, [0072])



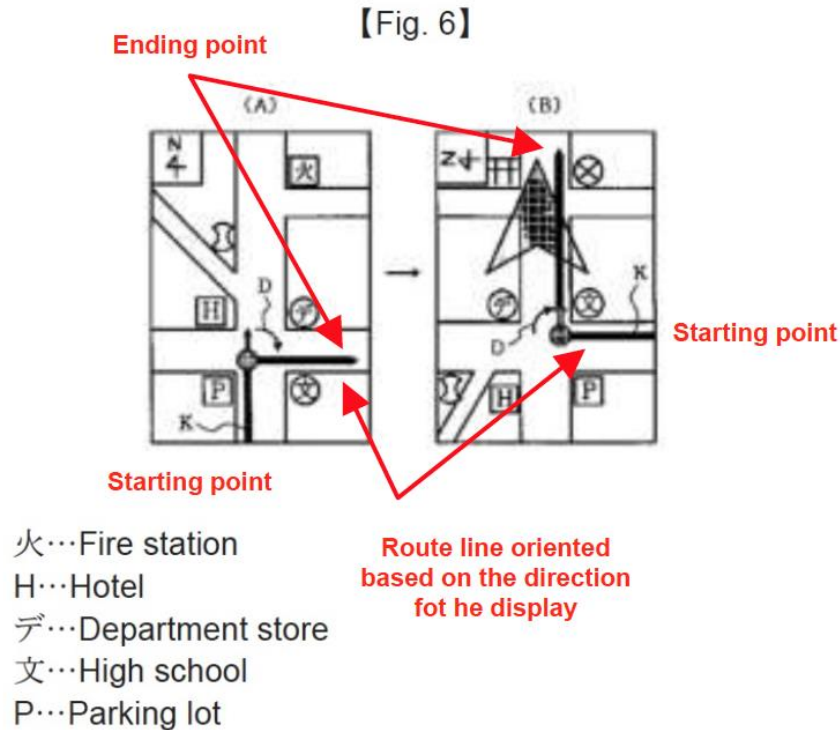
Nosaka would implicitly have a control unit for calculating the direction information based on the data from the compass and triaxial accelerometer. ASUS-1003, § IX.B.ii.c.

4. “wherein a direction and a distance of a destination from said present place are denoted with an orientation and a length of a line that is distinguished between starting and ending points to supply route guidance information as said walking navigation information” (Claim 1)

Suzuki describes that the direction and route to the destination is displayed on the map display. ASUS-1003, § IX.B.ii.d. For example, in connection with Figure 6, reproduced below with annotation provided by Mr. Andrews:

FIG. 6 shows the change of the screen of the display 12 in the case of guiding the wearer along the recommended route. In the case where *the wearer moves along the recommended route K*, the orientation of the wearer shown in *FIG. 6 (A) is changed so as to be indicated by an arrow D so as to match the direction of the recommended route K as shown in FIG. 6 (B) and the map is rotated and the large arrow is displayed on the screen*, and a guidance sound such as "beep-beep-beep" is output from the speaker 13 or the earphone 16, for example. By watching this arrow or listening to the guidance sound, the wearer can easily recognize which direction of the recommended route is in the landscape actually being watched.

(ASUS-1005, [0022])



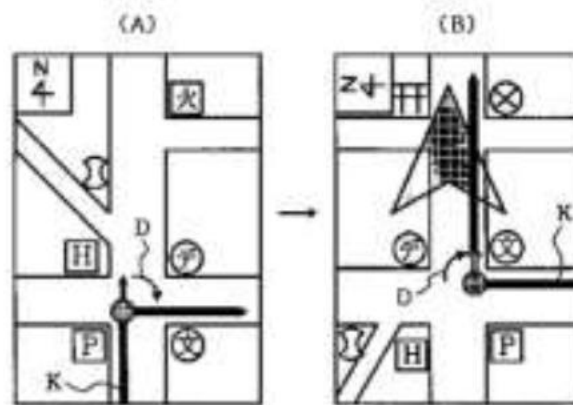
ASUS-1003 ¶ 170.

Suzuki further describes that the distance to the destination is computed, and can be indicated by the volume of the guidance tone. For example:

Also, the distance from the destination set by the guidance information generating unit 20 and the current position data measured by the current position measuring unit 26 to the destination is calculated, and as the vehicle approaches the destination, the volume of the guidance tone can be increased.

(ASUS-1005, [0037])

【Fig. 6】



火…Fire station
H…Hotel
デ…Department store
文…High school
P…Parking lot

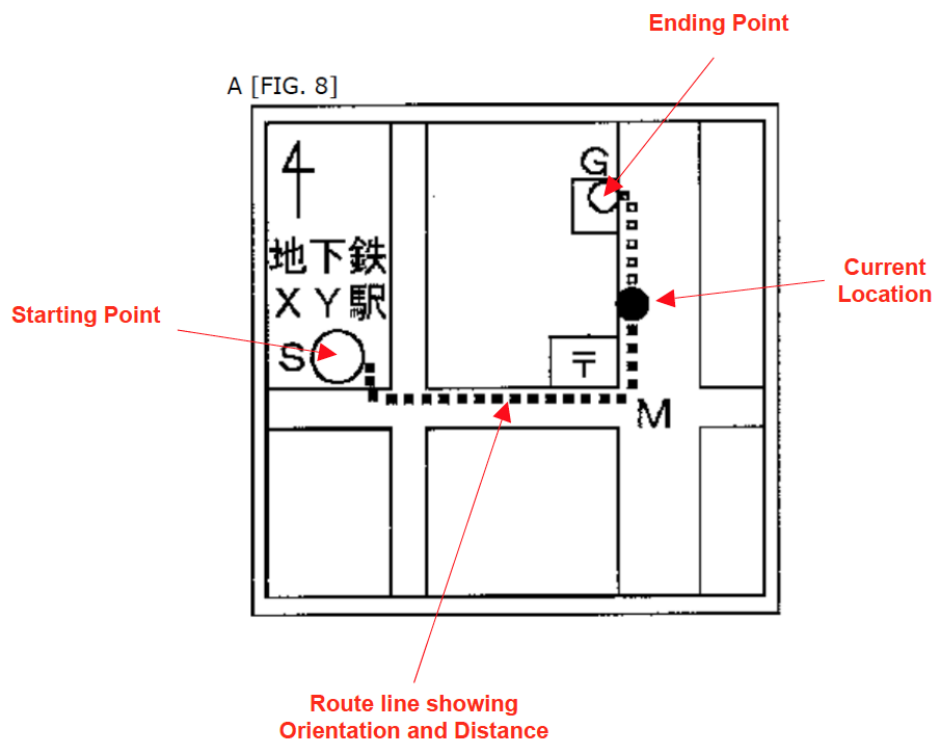
To the extent that the Board determines that Suzuki does not explicitly describe denoting direction and a distance of a destination from said present place with an orientation and a length of a line that is distinguished between starting and ending points, Nosaka does.

Nosaka also describes using symbols that form an orientation of a line to denote a route indicating the direction and a distance of a destination from said present place are denoted with an orientation. ASUS-1003, § IX.B.ii.d. This route is

distinguished between starting and ending points (for example, as shown in Fig. 8 below, with annotation by Mr. Andrews). For example:

When a specific route is selected, the selected specific route is superimposed on the map and displayed. For example, the specific route is displayed with a square mark row. That square is white. The starting position and the target position are indicated by white circles. The current position is indicated by a black circle. In the section that has already been walked, the square mark is added.

(ASUS-1008, [0028])



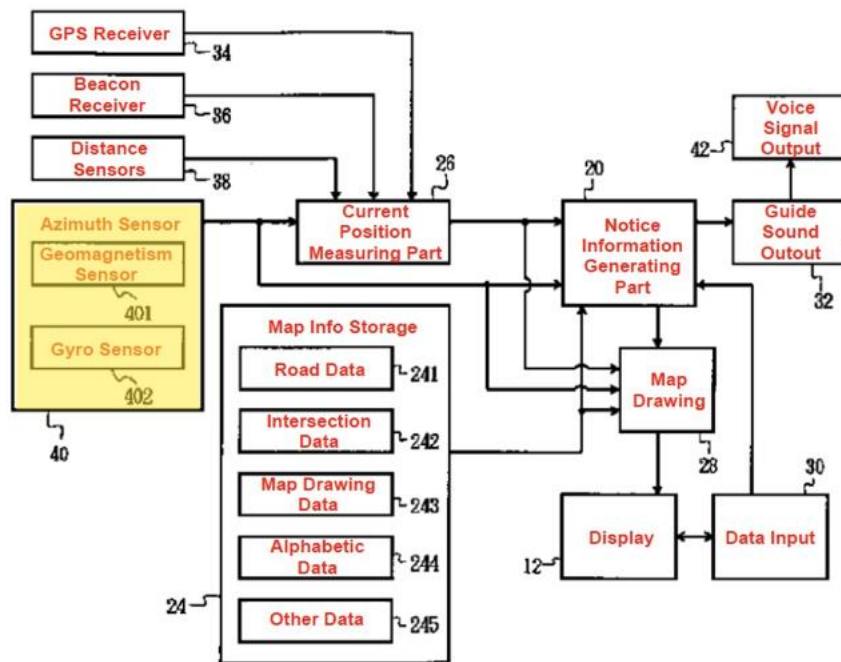
ASUS-1003 ¶ 173.

Mr. Andrews opines that, in addition to the general motivations to combine listed above, a POSITA would have been motivated to include the more complete and informative route guidance display of Nosaka in the system of Suzuki because this display provides additional distance information, and indicates the entire route between the origin of the trip and the destination. ASUS-1003 ¶ 174.

5. “A portable terminal, with the function of walking navigation according to Claim [1/5], wherein said device for getting direction information gets information of a direction pointed by the tip[s] of said portable terminal, as well as an angle of elevation” (Claims 2 and 6)

As described in other sections, this combination discloses and/or renders obvious all other elements of claim 1 and 5.

As described in connection with claims 1 and 5, Suzuki describes a device for getting the direction of the pedestrian navigation system (for example, using the described azimuth sensor). ASUS-1005, [0012]-[0014]; ASUS-1003, § IX.B.iii.b. These devices are also illustrated in Figure 2 of Suzuki, reproduced with annotation below.



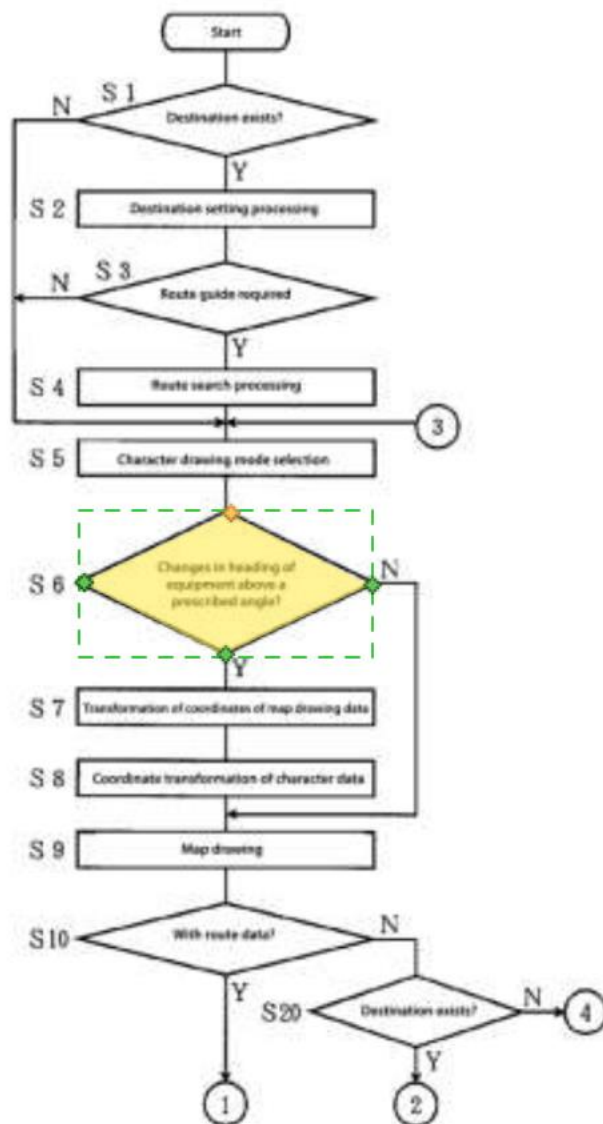
Suzuki further describes that the system orients the map display depending on the direction that the device is pointing (i.e. the direction of the tip of the device).
ASUS-1003, § IX.B.iii.b.

Next, the guidance information generating unit 20 obtains the azimuth change of the portable navigation device 10 within a predetermined time from the detection value of the direction sensor 40 (step 6). If the direction change is equal to or greater than a predetermined angle, for example, 5 °, or 10 ° or more (step 6; Y), the map drawing unit 28 transmits the orientation detected by the orientation sensor 40 to the display 12. The map drawing data 243 read from the map information storage unit 24 is coordinate transformed so as to be rotated and drawn (step 7). The map drawing data 243 subjected to the coordinate

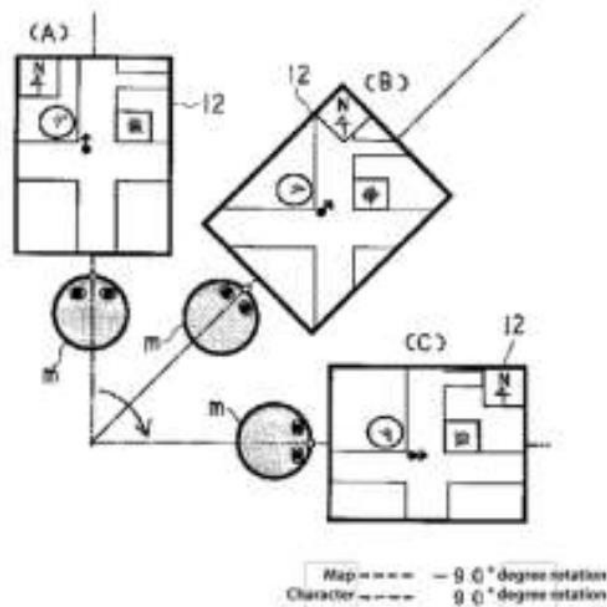
conversion is stored in the map layer 50 (FIG. 3) of the drawing data RAM of the map drawing unit 28.

(ASUS-1005, [0027])

This is illustrated in the translated flow diagram of Fig. 10 reproduced below with highlighting provided by Mr. Andrews (testing “Changes in heading of equipment above a prescribed angle?”), and also in Figure 8, reproduced below, which shows that as the tip of the device is pointed in a different direction, the device uses the direction information of the tip of the device to rotate the display accordingly. ASUS-1003 § IX.B.iii.b, ¶ 221.



【Fig. 8】



H…Hotel
 デ…Department store
 文…High school
 P…Parking lot
 銀…bank

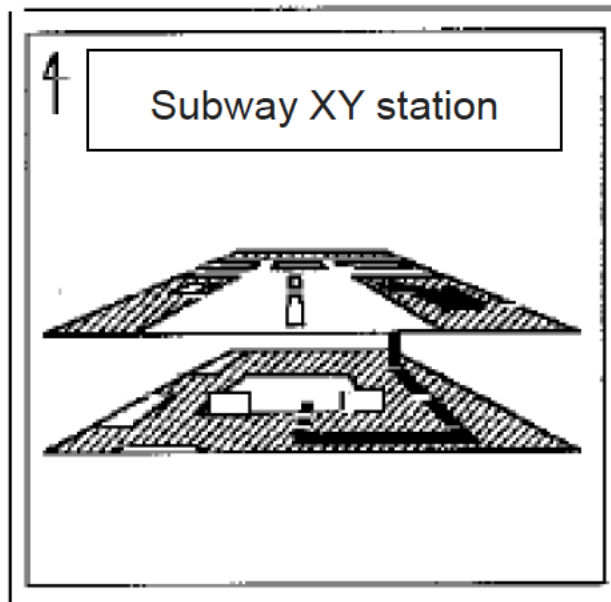
As noted above, Suzuki describes that the direction sensor is comprised of a geomagnetic sensor (i.e. a compass) and a gyro sensor. A POSITA would have understood that many gyro sensors at the alleged time of invention provided three axis sensing, and thus would be capable of providing elevation direction as well as horizontal azimuth direction (for example, the three-axis gyro sensor disclosed in Nosaka). A POSITA would have been motivated to include a three-axis gyro sensor in Suzuki to provide the most accurate direction information of the device (for

example, being able to tell if the display was facing up or facing the ground). ASUS-1003 ¶ 222.

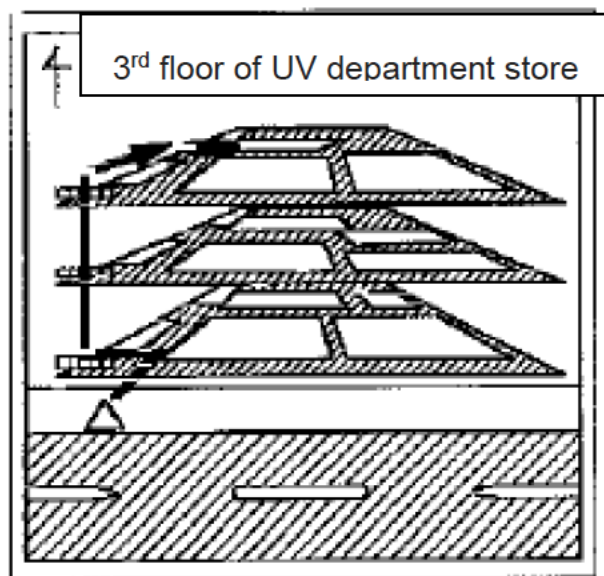
Nosaka describes that the display includes a “bearing mark”, which indicates the direction on the map the user is to travel, and a “magnet” (*i.e.*, a compass) which indicates the direction the user is facing (*i.e.* the orientation of the tip of the device). ASUS-1003, § IX.B.iii.b

Nosaka also describes that in many cases the pedestrian user may be in a building, and that their destination may be on a different floor. ASUS-1008, [0067], [0086]. For example, as illustrated in figures 9 and 10 reproduced below:

【FIG. 9】



【FIG. 10】



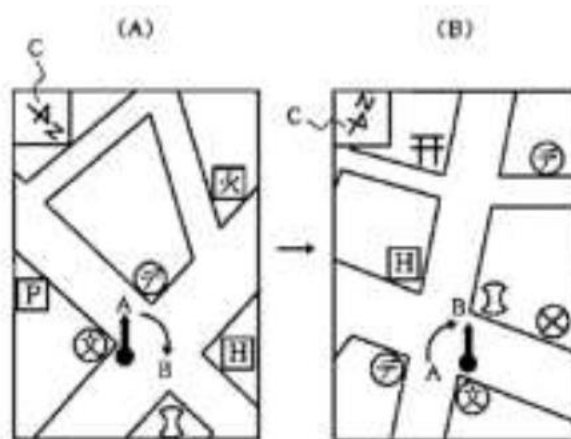
Nosaka also describes that the acceleration due to gravity is determined and this is used to determine when the user device is moving in elevation (i.e. going up or down) using acceleration (vibration) components G_x , G_y , and G_z using the axis correction circuit 34. ASUS-1008, [0075], [0085], ASUS-1003, § IX.B.iii.b.

Accordingly, a POSITA would understand that Nosaka discloses that a direction of the device, including an angle of elevation, is measured by the three-axis accelerometer disclosed. ASUS-1003, § IX.B.iii.b.

6. “A portable terminal, with the function of walking navigation according to Claim [1/5] wherein said device for getting direction information gets orientation information of a display of said portable terminal” (Claims 3 and 7)

As described in connection with Claims 2 and 6, Suzuki describes that the azimuth sensor determines the orientation of the main apparatus body, and thus implicitly gets the orientation of the display, which is fixed to the rigid main body, when a map that is rendered on the display is rotated according to the orientation of the display. ASUS-1005, [0005], [0020]; ASUS-1003, § IX.B.iv.b. This is also described in connection with Figure 5, reproduced below:

【Fig. 5】

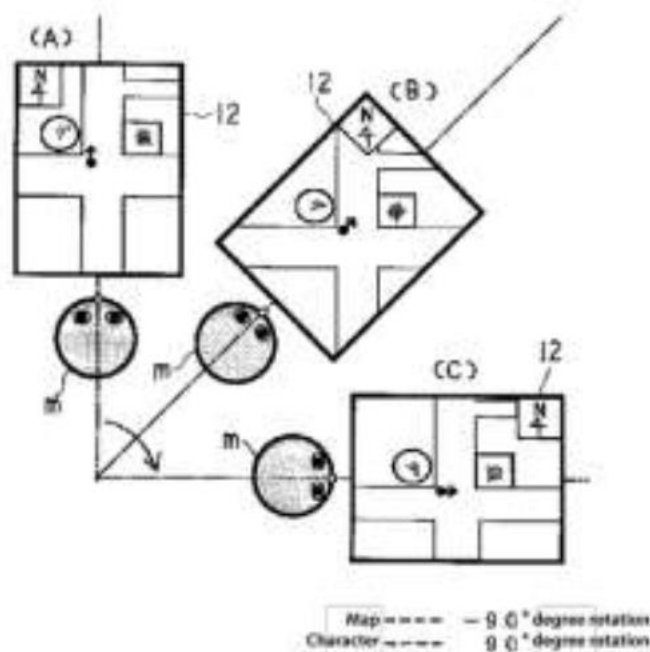


火…Fire station
H…Hotel
デ…Department store
文…High school
P…Parking lot

As can be appreciated in this figure, the orientation of the display has changed (see A and B in the figure) by 90 degrees. The system has rotated the display by 90 degrees, as can be ascertained by the change in position of the departments store, hotel and high school symbols on the display. These symbols have not changed their relative position, but because the device display orientation has changed the positions of these symbols relative to the display has changed.

This can also be seen in Figure 8, reproduced below, which illustrates that when the user turns the display, the map displayed on the display changes so that the map remains oriented with the actual streets. ASUS-1005, [0027]-[0028].

【Fig. 8】



As described above in connection with Claims 1 and 2, Nosaka also discloses a compass (e.g., “magnet” 11) and a three-axis accelerometer for determining the orientation of the portable terminal, which would similarly and implicitly get the orientation of the display whenever it gets the direction of the tips of the terminal, because both are fixed to the rigid main body of the device.

ASUS-1003, § IX.B.iv.b.

7. “wherein a local route around said present place is shown with a bent line and a direction of movement is shown with an arrow on said bent line to supply route guidance information as said walking navigation information” (Claim 5).

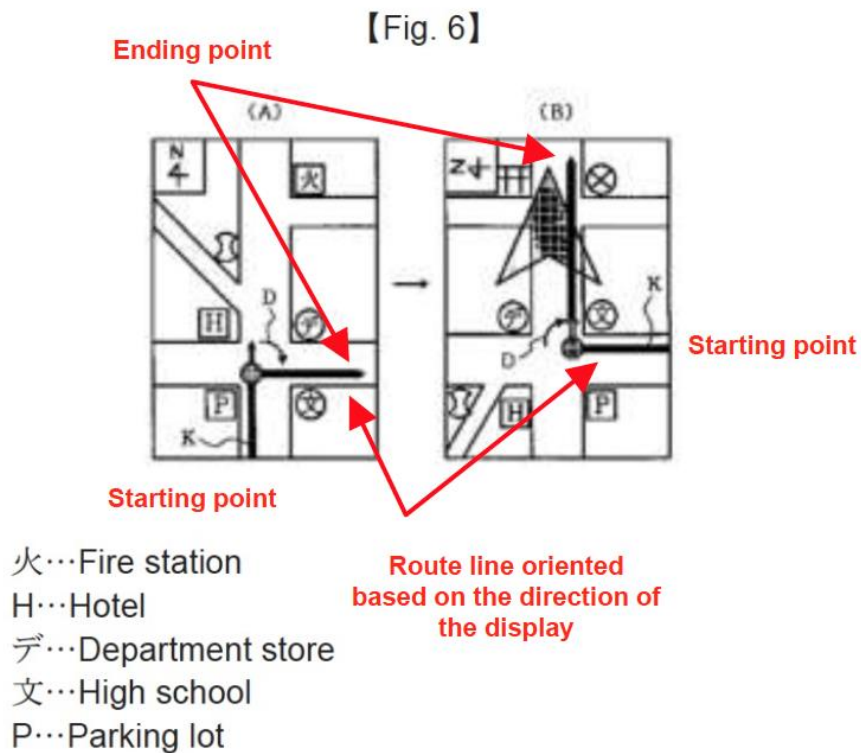
Suzuki describes the local route around the present place using a bent line on the display to supply route guidance information to a user who is walking. ASUS-1003, § IX.B.v.d-e. For example, the recommended route K includes an arrow at the end of the bent line indicating the direction to walk (including as disclosed in Fig. 6 below, as annotated by Mr. Andrews):

FIG. 6 shows the change of the screen of the display 12 in the case of guiding the wearer along the recommended route. In the case where *the wearer moves along the recommended route K*, the orientation of the wearer shown in *FIG. 6 (A) is changed so as to be indicated by an arrow D so as to match the direction of the recommended route K as shown in FIG. 6 (B) and the map is rotated and the large arrow is displayed on the screen*, and a guidance sound such as "beep-beep-beep" is output from the speaker 13 or the earphone 16, for example.

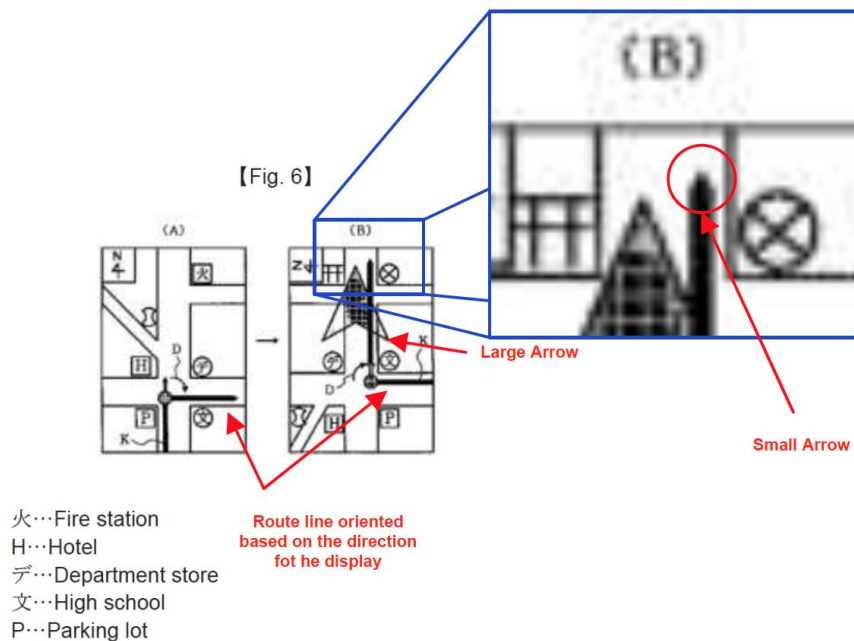
- 66 -

By watching this arrow or listening to the guidance sound, the wearer can easily recognize which direction of the recommended route is in the landscape actually being watched.

(ASUS-1005, [0022])



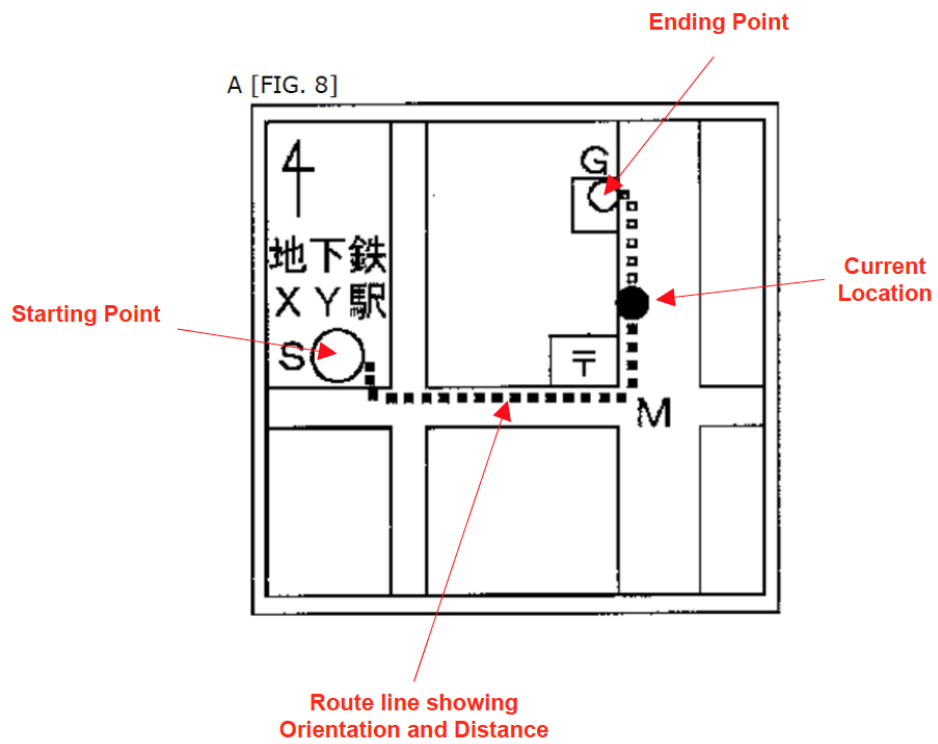
ASUS-1003, ¶ 209.



Id. ¶ 212.

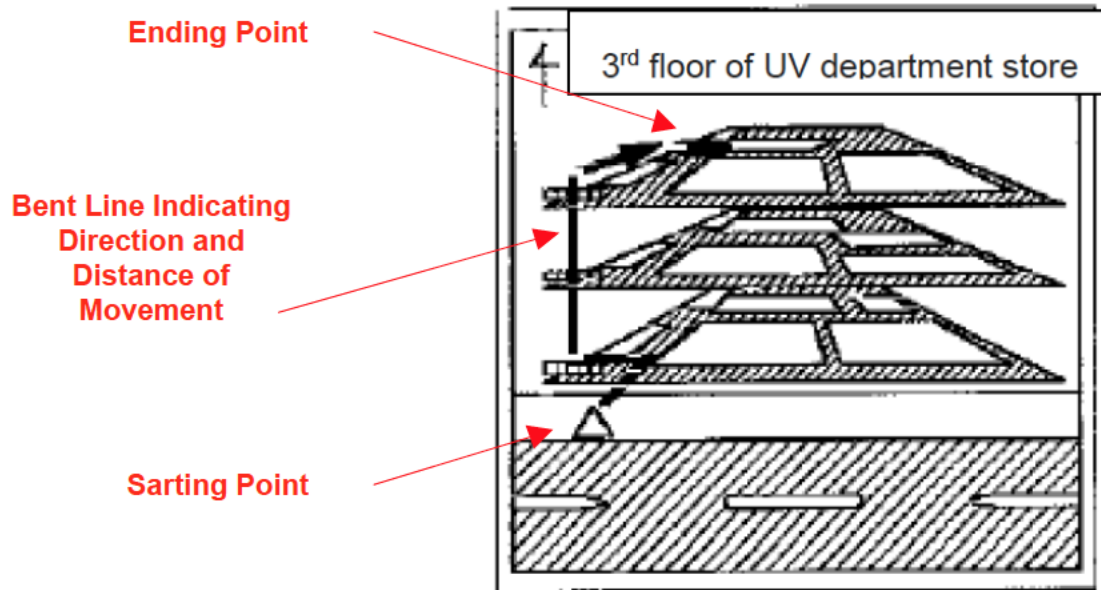
As can be appreciated in the figure above, the recommended route line K is bent.

Nosaka also describes using a bent line to display the local route around the present place. ASUS-1003, § IX.B.v.d-e. A POSITA would also understand that it would be obvious to include an arrow on the recommended route (as disclosed in Suzuki and as known in the art) so a user would understand in which direction to walk. *Id.* For example, in connection with Figures 8 and 10, reproduced below with annotations added by Mr. Andrews, the recommended route is indicated with a bent line represented by white squares. ASUS-1008, [0028].



ASUS-1003 ¶ 211.

【FIG. 10】

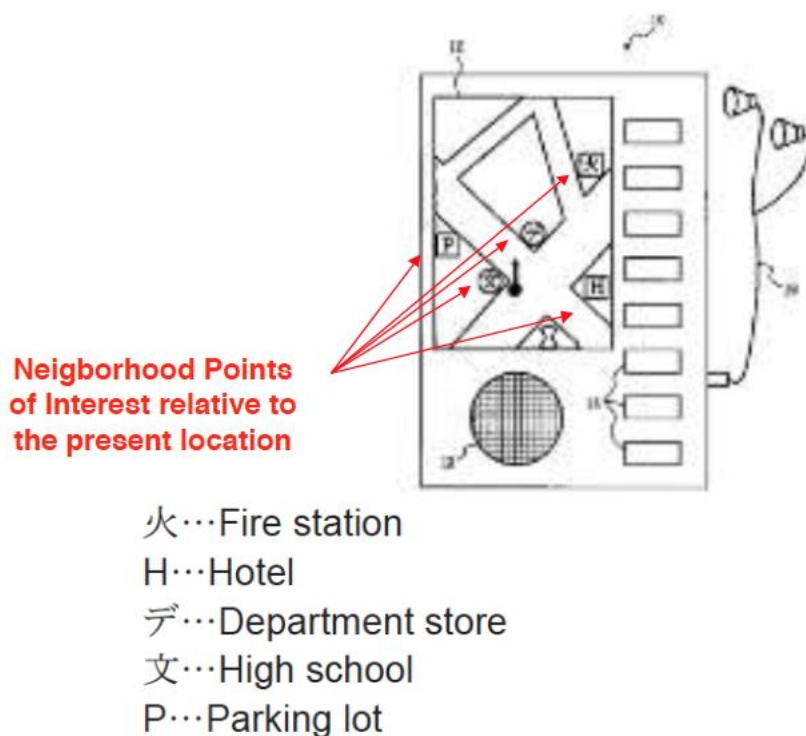


Id.

8. “The portable terminal with said function of walking navigation according to claim 5 wherein neighborhood guidance information is retrieved in a direction from said present place so as to supply said neighborhood guidance information as said walking navigation information” (Claim 8)

Suzuki describes indicating neighborhood guidance information (information regarding points of interest) in a direction from the present place as the device is rotated. ASUS-1003, § IX.B.viii.b. For example, and as disclosed in annotated Fig. 1 below, the display shows points of interests such as department stores, school, fire station, and hotels. ASUS-1005, [0011].

【Fig. 1】



ASUS-1003 ¶ 237.

Nosaka also describes indicating neighborhood guidance information (information regarding points of interest) in a direction from the present place. ASUS-1003, § IX.B.viii.b. For example, Nosaka describes that the portable navigation terminal can be linked to an “information station.” Using this feature the user can, for example select entertainment or other types of information, and the system will display corresponding information about the selected type of information associated with nearby buildings. ASUS-1008 [0059]. Figs. 6, 11, and

12 are reproduced with annotation below, showing nearby restaurants, road/railway/bus information, building information, etc.:

【FIG. 6】

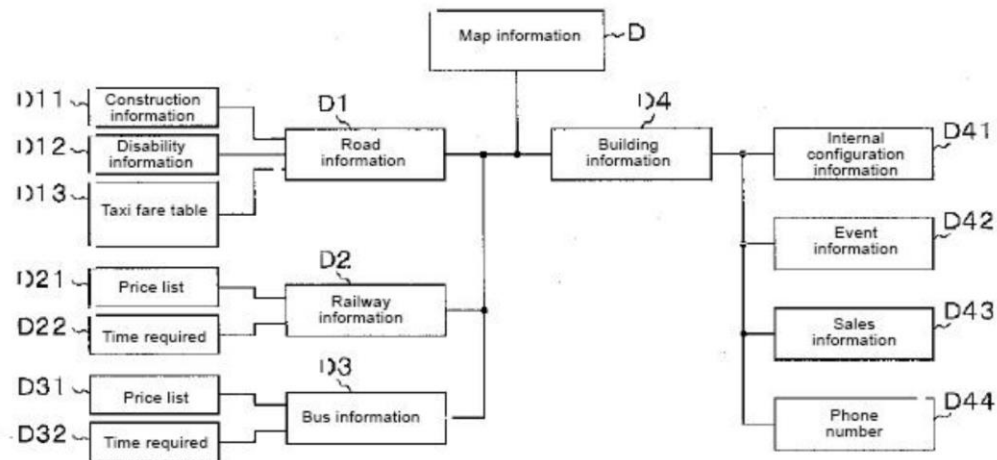
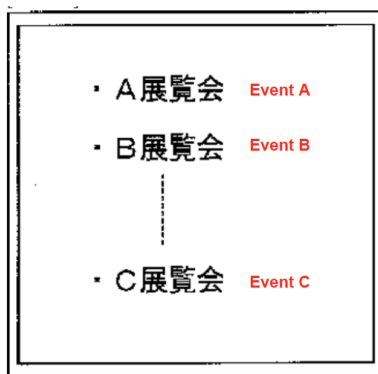


Fig. 11

Fig. 12



E. Ground 2: Claims 1-3 and 5-8 Are Unpatentable Under 35 U.S.C. §103 as Obvious over the Combination of Suzuki and Colley

1. “A portable terminal, with the function of walking navigation” (Claims 1 and 5).

Suzuki discloses this element as described in Ground 1.

Colley also discloses a navigation system that can be used in a variety of applications, including pedestrian applications, such as hiking. ASUS-1003, § IX.C.ii.a; ASUS-1011, 5:31-42. Colley describes that the device is specifically related to the display of navigational information to guide a user from their current position to a desired destination. ASUS-1011, 1:7-13.

2. “a device for getting location information denoting a present place of said portable terminal” (Claims 1 and 5)

Suzuki discloses this element as described in Ground 1.

Colley also discloses a navigation and guidance system that determines the user’s position and course. ASUS-1003, § IX.C.ii.b; ASUS-1011 at Abstract. Colley further describes that the user’s position can be determined using a GPS receiver and/or LORAN receiver and displayed. ASUS-1011, 1:18-22, 3:31-38. Colley further discloses utilizing data from a variety of navigation systems (including GPS, LORAN, inertial navigation, and/or radar systems) and calculating the point along the current course that is closest to a predefined destination (inherently using a control unit or processor to perform the calculation). ASUS-1011, 2:65-3:4. The user’s position and course-over-ground indication are determined and indicated on the display using a line or arrow. ASUS-1011, 2:20-23. *See also* ASUS-1011, Fig. 1a (indicating the user’s current position):

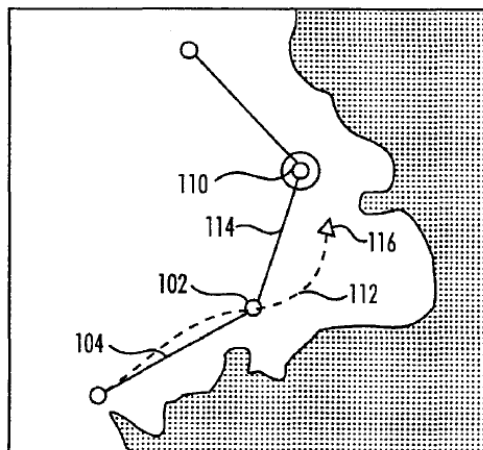


FIG. 1a

3. “a device for getting direction information denoting an orientation of said portable terminal” (Claims 1 and 5)

Suzuki discloses this element as described in Ground 1.

Colley further discloses that the navigation and guidance system determines the user’s position and the course required to reach the desired destination from the current position and indicated on the display using a line or arrow. ASUS-1003, § IX.C.ii.c; ASUS-1011 at Abstract. Colley refers to the user’s COG (Course-over-Ground), and the user’s “track”, which a POSITA would understand to be the current heading or direction of travel. ASUS-1011, 1:31-34; 2:18-24; ASUS-1003 ¶ 257.

Colley illustrates this, for example in Figure 1a, reproduced below. In this figure, the dotted line 112 corresponds to the user’s current track, and the angle of the arrow 116 at the end of this line 112 is the user’s “current heading.” ASUS-1011, 1:45-53. It would therefore be inherent or obvious to include a device for

getting direction information in the system disclosed by Colley in order to calculate and display the current heading information. ASUS-1003, § IX.C.ii.b.

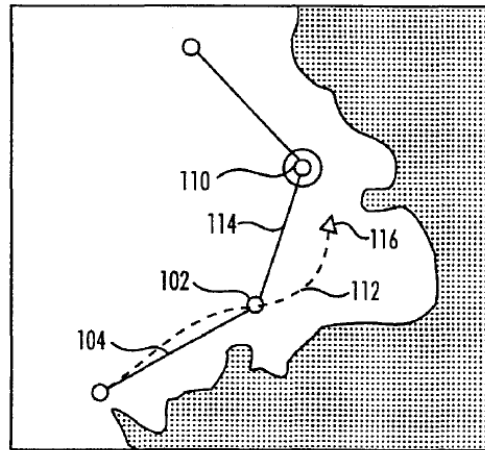


FIG. 1a

4. “wherein a direction and a distance of a destination from said present place are denoted with an orientation and a length of a line that is distinguished between starting and ending points to supply route guidance information as said walking navigation information” (Claim 1)

Suzuki discloses this element as described in Ground 1.

To the extent that it is determined that Suzuki does not explicitly describe denoting direction and a distance of a destination from said present place with an orientation and a length of a line that is distinguished between starting and ending points (for example, when pointing to a destination that requires no turns), Colley does. Colley describes that the display includes a “bearing-to-destination indicator” that is represented on the display as a straight dotted line from the current position

to the destination. ASUS-1003, § IX.C.ii.d; ASUS-1011, 3:19-25; 3:44-47. This is illustrated as item 212 in Figures 2 and 3, reproduced below.

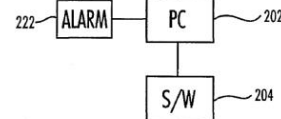
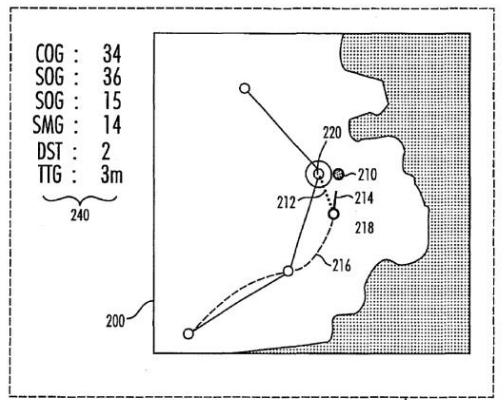


FIG. 2

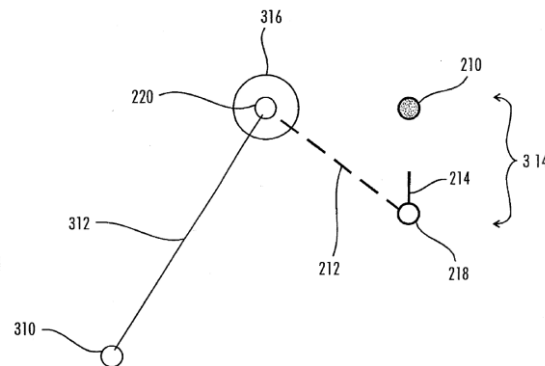


FIG. 3

The orientation and length of this line on the display indicate the direction and distance to the destination.

Colley teaches that the user's position and course "are determined by the navigation system and indicated on the display as a directional pointing icon, such as a line or arrow." ASUS-1011 at 2:18-23. Mr. Andrews teaches that a POSITA would have been motivated to include the more complete and informative display of Colley in the system of Suzuki because this display provides additional distance information, and indicates the entire route between the origin of the trip and the destination via a series of waypoints. ASUS-1003, § IX.C.ii.d.

5. “A portable terminal, with the function of walking navigation according to Claim [1/5], wherein said device for getting direction information gets information of a direction pointed by the tip[s] of said portable terminal, as well as an angle of elevation” (Claims 2 and 6)

Suzuki discloses this element as described in Ground 1.

Colley discloses a navigation system that can be used in a variety of applications, including pedestrian applications, such as hiking, and teaches that “embodiments of the invention may be incorporated into almost any type of moving object, system, or simply carried by a person.” ASUS-1003, § IX.C.iii.b; ASUS-1011, 5:31-42.

Colley describes that the device is specifically related to the display of navigational information to guide a user from their current position to a desired destination and indicates the user’s heading in a “simple and direct format for immediate identification of the user’s present location relative to a desired location,” implicitly getting information regarding the direction pointed by the tip of the device. ASUS-1011, 1:7-13. A COG indicator 214 also indicates the user’s current heading, as disclosed in Figs. 2 and 3:

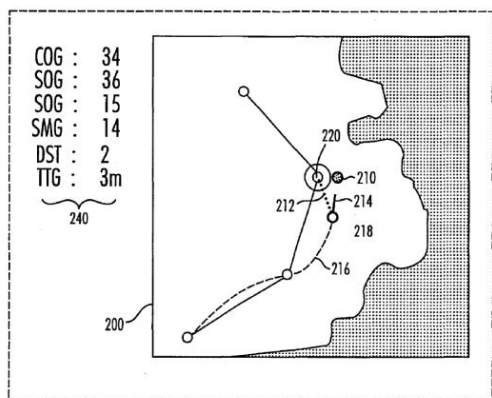


FIG. 2

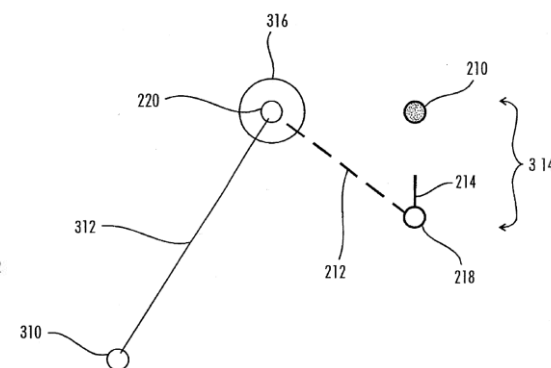
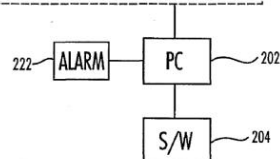


FIG. 3

This would inherently mean that Colley's device retrieves information regarding a direction of the tip of the display, else it would not be able to provide current heading information. A POSITA would further understand that the use of a three-axis gyro or a clinometer, as was well-known in the art, would also allow the user to determine their angle of elevation to provide the most accurate direction information of the device. *ASUS-1003, ASUS-1003*, ¶ 275.

6. “A portable terminal, with the function of walking navigation according to Claim [1/5] wherein said device for getting direction information gets orientation information of a display of said portable terminal” (Claims 3 and 7)

Suzuki discloses this element as described in Ground 1.

Colley discloses getting direction information of the tip of the device as disclosed in connection with Claims 2 and 6. It would implicitly also get the

orientation of the display of the system, which would be rigidly connected to the tip of a device. ASUS-1003, § IX.C.iv.b.

7. “wherein a local route around said present place is shown with a bent line and a direction of movement is shown with an arrow on said bent line to supply route guidance information as said walking navigation information” (Claim 5).

Suzuki discloses this element as described in Ground 1.

Colley describes that the route is represented on the display as a sequence of linked line segments connecting the various waypoints. ASUS-1003, § IX.C.v.d-e. As can be appreciated in the Figures 1 and 2 below, the resulting line or arrow follows the waypoints, and this defines the route. ASUS-1011, 2:18-23 (“The user’s position and COG are determined by the navigation system and indicated on the display as a directional pointing icon, such as a line or arrow.”); 3:39-47. As the waypoints are not necessarily collinear, the line will be “bent,” as shown in Figs. 2 and 3. ASUS-1011, 4:16-24 (“The origin waypoint is often described with respect to point-to-point navigation, which allows the user to follow multiple straight-line segments along a route.”). COG indicator 214 and/or BTD indicator 212 show a direction of movement along the line.

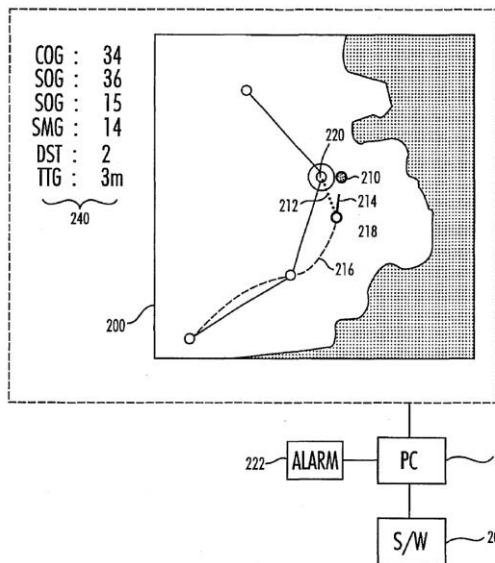


FIG. 2

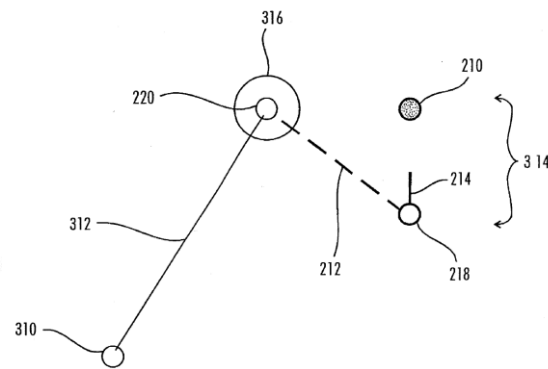


FIG. 3

8. “The portable terminal with said function of walking navigation according to claim 5 wherein neighborhood guidance information is retrieved in a direction from said present place so as to supply said neighborhood guidance information as said walking navigation information” (Claim 8)

Suzuki discloses this element as described in Ground 1.

F. Ground 3: Claims 1-3 and 5-7 Are Unpatentable Under 35 U.S.C. §103 as Obvious over the Combination of Suzuki, Colley, and Ellenby

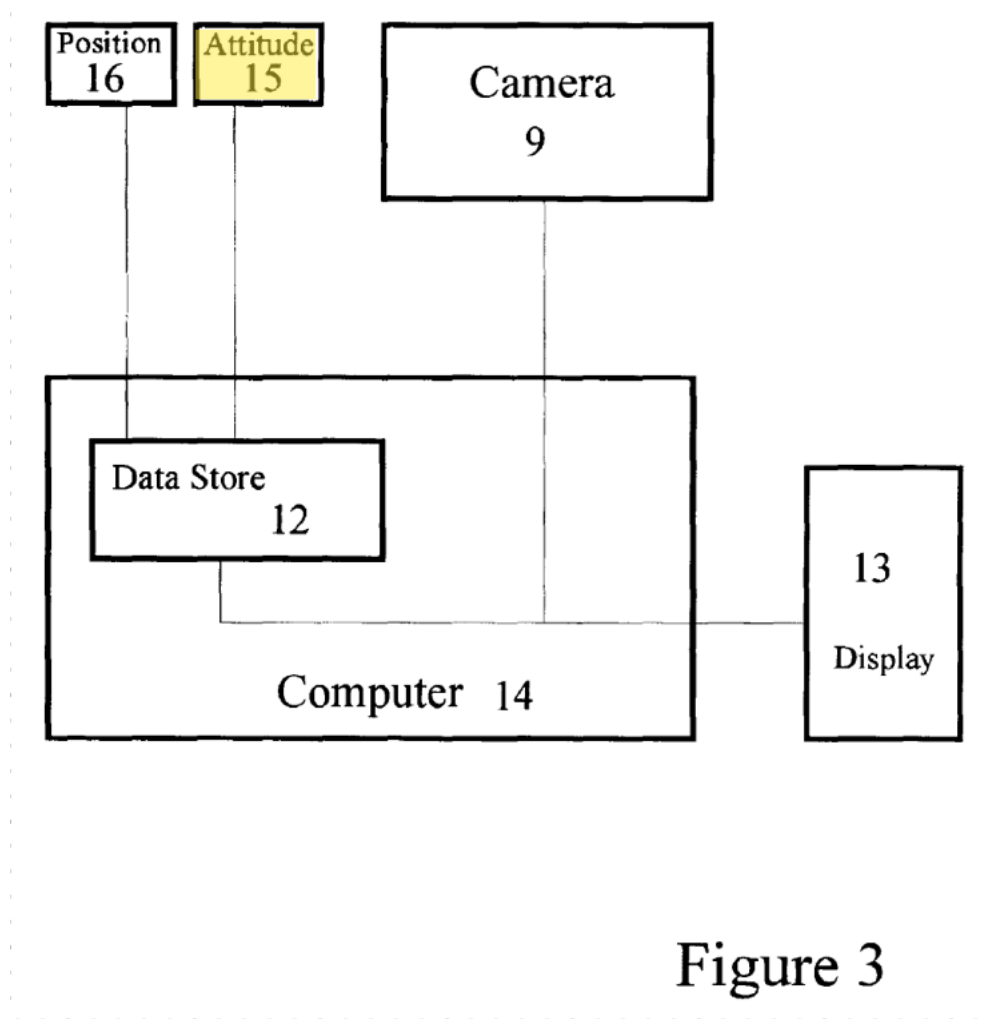
- 1. “A portable terminal, with the function of walking navigation” (Claims 1 and 5).**
- 2. “a device for getting location information denoting a present place of said portable terminal” (Claims 1 and 5)**
- 3. “wherein a direction and a distance of a destination from said present place are denoted with an orientation and a length of a line that is distinguished between starting and ending points to supply route guidance information as said walking navigation information” (Claim 1)**
- 4. “A portable terminal, with the function of walking navigation according to Claim [1/5] wherein said device for getting direction information gets orientation information of a display of said portable terminal” (Claims 3 and 7)**
- 5. “wherein a local route around said present place is shown with a bent line and a direction of movement is shown with an arrow on said bent line to supply route guidance information as said walking navigation information” (Claim 5).**

Suzuki and Colley disclose each of the above-listed elements as discussed in Grounds 1 and 2.

- 6. “a device for getting direction information denoting an orientation of said portable terminal” (Claims 1 and 5)**

Suzuki and Colley disclose this element as discussed in Grounds 1 and 2.

Ellenby describes, in connection with Figure 3, reproduced below, that the system, is comprised of a camera, position and attitude sensors, a data store, a computer and a display. ASUS-1003, § IX.D.ii.c; ASUS-1022, 10:28-31.



Ellenby describes that the attitude determining means 15 may be implemented one of three means, each providing heading, tilt and roll of the device, including a flux gate compass 37, outputs from piezo-electric gyros, or a triaxial magnetometer incorporating a biaxial electrolytic inclinometer. ASUS-1003, § IX.D.ii.c, ASUS-1022, 12:65-13:10. Therefore, Ellenby describes that the attitude determining means comprises several devices used by computer 14 to determine the direction the camera (*i.e.*, the tip of the device) is pointed. ASUS-1003, ¶¶ 743-744.

7. “A portable terminal, with the function of walking navigation according to Claim [1/5], wherein said device for getting direction information gets information of a direction pointed by the tip[s] of said portable terminal, as well as an angle of elevation” (Claims 2 and 6)

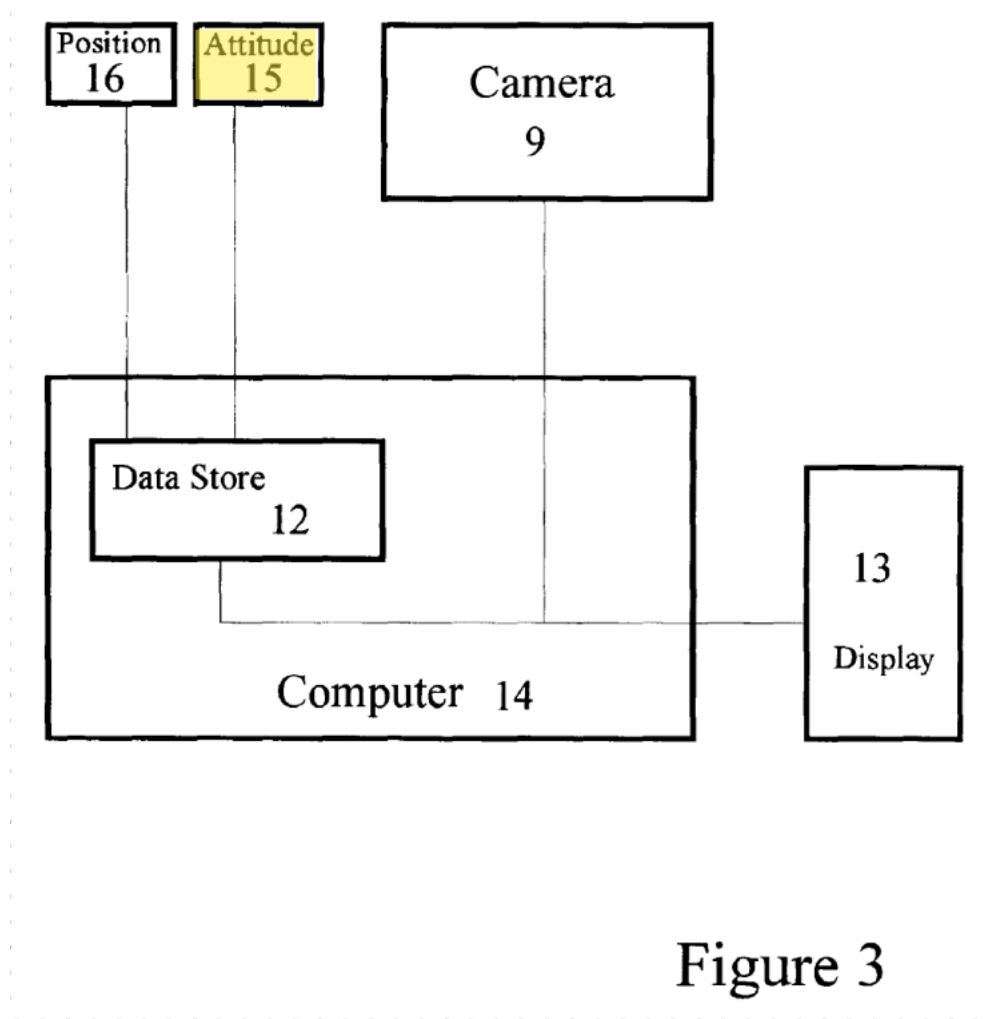
Suzuki and Colley disclose this element as discussed in Grounds 1 and 2.

Furthermore, to the extent the Board does not agree that Suzuki and Colley disclose a device for getting an angle of elevation, Ellenby does.

Ellenby describes, in connection with Figure 3, reproduced below, that the system, is comprised of a camera, position and attitude sensors, a data store, a computer and a display. ASUS-1003, § IX.D.iii.b. For example:

In a first preferred embodiment of the invention, an electro-optic apparatus comprising a camera 9, a position determining means 16, an *attitude determining means 15*, a data store 12, a computer 14, and a display 13;

ASUS-1022, 10:28-31.

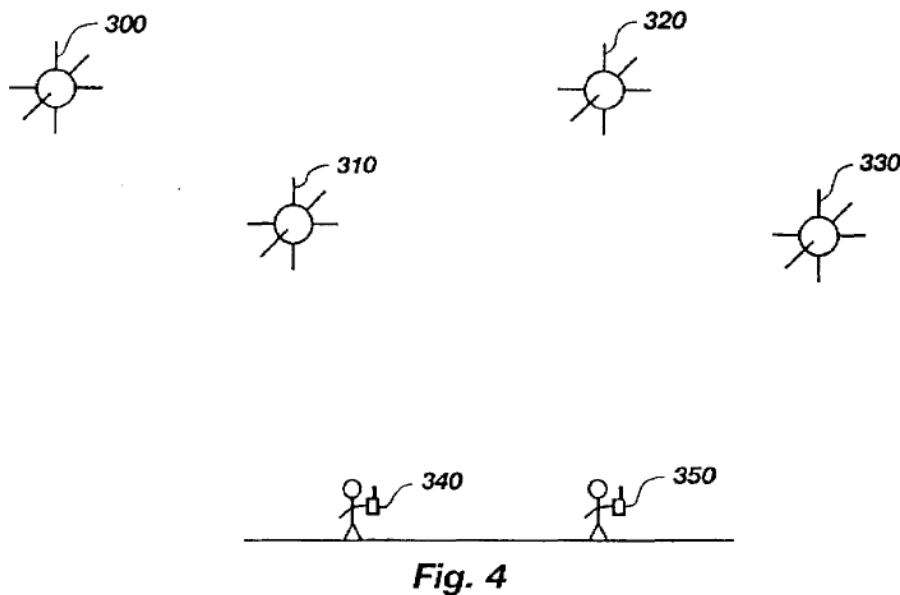


Ellenby describes that the attitude determining means may be implemented one of three means, each providing heading, tilt and roll of the device, including a flux gate compass 37, outputs from multiple piezo-electric gyros, or a triaxial magnetometer incorporating a biaxial electrolytic inclinometer. ASUS-1022, 12:65-13:10. Therefore, Ellenby describes that the attitude determining means comprises several devices intended to determine the direction the camera (*i.e.*, the tip of the device) is pointed, including getting an angle of elevation. ASUS-1003, ¶¶ 755-56.

G. Ground 4: Claims 1-7 and 9-13 Are Unpatentable Under 35 U.S.C. §103 as Obvious over the Combination of Norris and Colley.

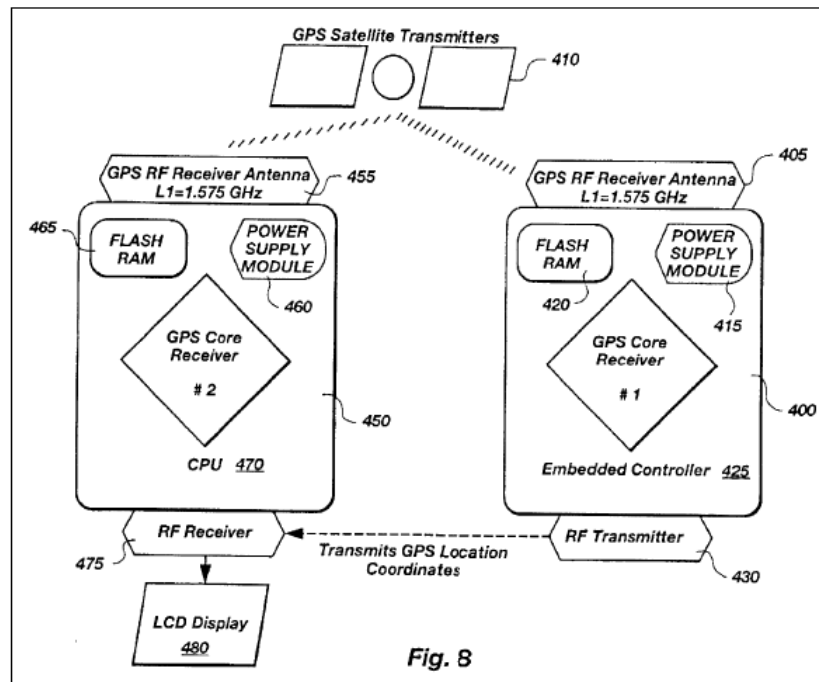
1. “A portable terminal, with the function of walking navigation” (Claims 1, 5, and 10).

Norris discloses a portable terminal used for, among other things, pedestrian (i.e. walking) navigation. ASUS-1003, § IX.E.ii.a. For example, Figure 4, reproduced below indicates two portable terminals 340 and 350 which are shown as being held by two pedestrian users:



These devices are illustrated in greater detail in Fig. 8 of Norris, reproduced below.

ASUS-1010, 9:24-26 (teaching receivers 340 and 350 are portable GPS devices).



Colley further discloses this element as described in Ground 2.

2. “a device for getting location information denoting a present place of said portable terminal” (Claims 1, 5, and 10)

Norris discloses a device for getting location information denoting a present place of said portable terminal. ASUS-1003, § IX.E.ii.b. For example, Figure 4, reproduced below, illustrates the portable terminals 340 and 350 (comprising GPS receivers) together with GPS satellites 300 to 330.

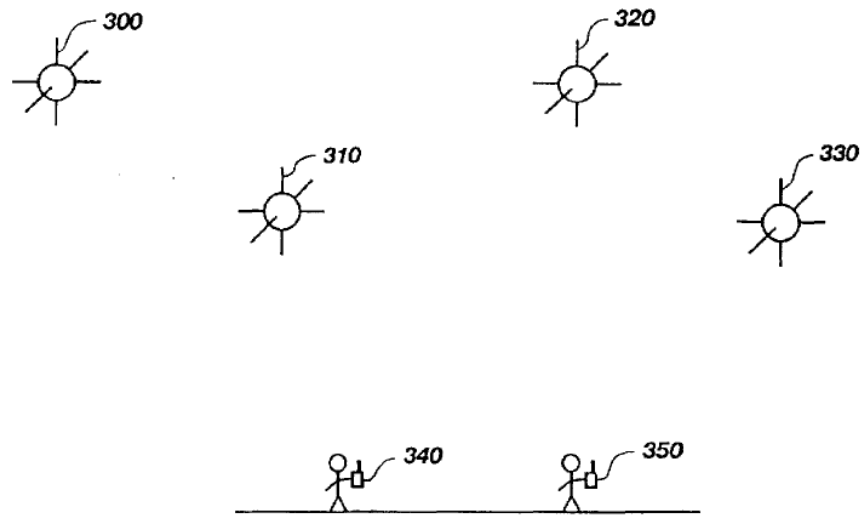
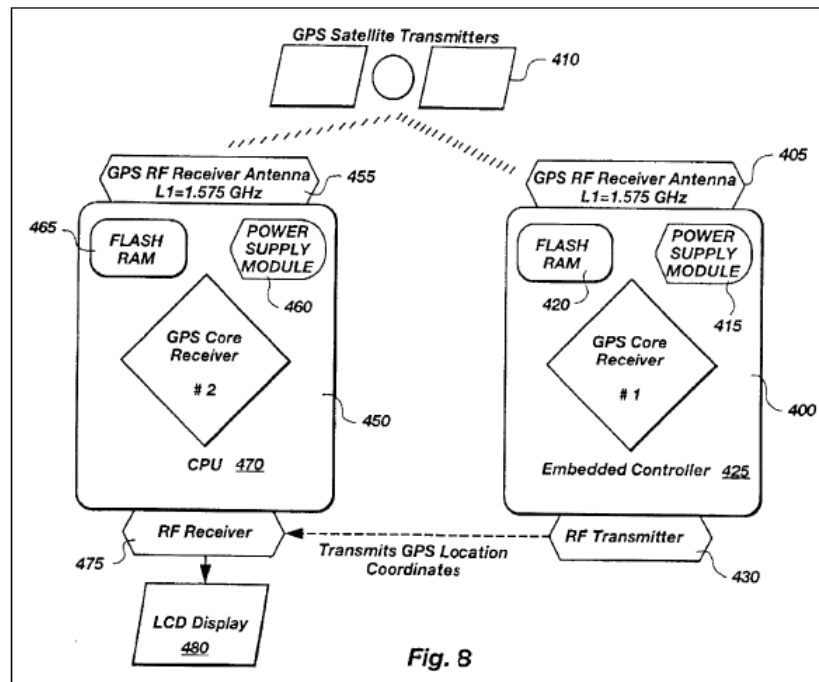


Fig. 4

Norris describes that the portable devices are able to determine their respective positions using GPS receivers and calculating their position using triangulation and quadrangulation formulas known in the art. ASUS-1010, 6:38-48.

Norris also provides a detailed Figure 8 (reproduced below) showing the internal components of portable devices 340 and 350 and describes how the GPS devices use an internal embedded controller or microprocessor to calculate the device's location based on data received from the GPS device. ASUS-1010, 9:24-45. Figure 8 is reproduced below:



ASUS-1010 Fig. 8.

Colley further discloses this element as described in Ground 2.

3. “a device for getting direction information denoting an orientation of said portable terminal” (Claims 1, 5, and 10)

Norris discloses a device for getting a direction information denoting an orientation of said portable terminal. ASUS-1003, § IX.E.ii.c. Specifically, Norris describes that each GPS device includes an internal compass and performs calculations to determine the orientation of the device (for example, to orient the device to direct a user to a partner’s device, as shown in Figa. 5A-C). For example:

This ability is crucial because the *orientation of the second GPS device 350 relative to a compass may be changing constantly*. Therefore, the present invention envisions that a user will be able to hold the second

GPS device 350 and turn in a circle, and *the arrow 354 will always point toward the first GPS device 340*. This implies that the circle 360, if shown, also remains fixed relative to the compass. *This ability is a result of an internal compass of the second GPS device 350. The internal compass provides a fixed reference point relative to which the continuously displayed arrow 354 will use to always point toward the first GPS device 340.*

ASUS-1010, 7:18-29)

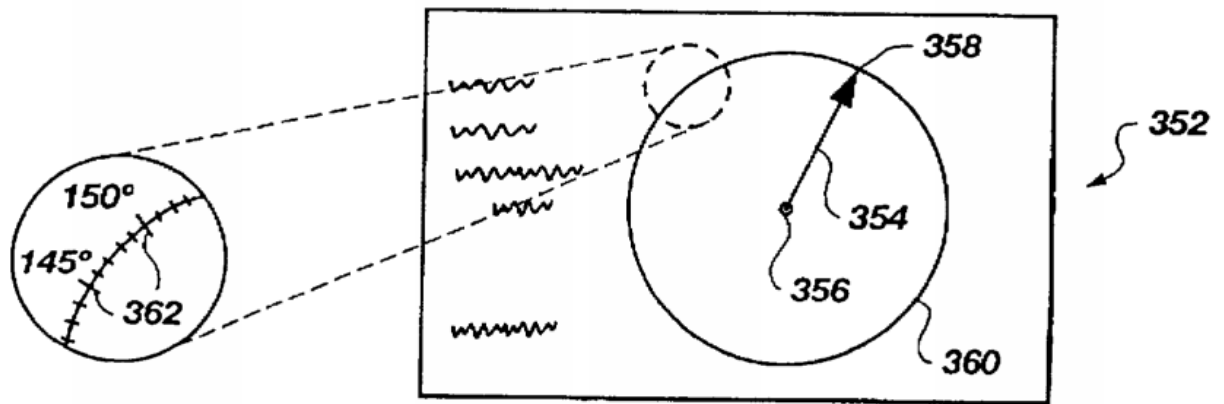


Fig. 5B

Fig. 5A

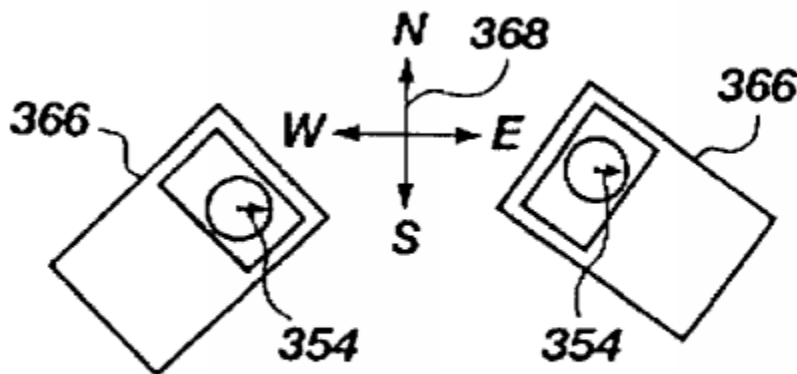


Fig. 5C

Colley further discloses this element as described in Ground 2.

4. “wherein a direction and a distance of a destination from said present place are denoted with an orientation and a length of a line that is distinguished between starting and ending points to supply route guidance information as said walking navigation information” (Claim 1)

Norris discloses that a direction and a distance from a present place to a desination (e.g., a partner’s mobile terminal) are denoted with an orientation and a length of a line indicating a direction and distance to the destination. ASUS-1003, § IX.E.ii.d. For example, Norris teaches that a receiving device displays the position of the transmitting device on the receiving device display, as illustrated in Figs. 5A-C.. As shown in Fig. 5C, the orientation of the receiving device is used to rotate the display so that the relative position of the transmitting terminal is always displayed

in such a way that the directional indicator, indicating the direction to the transmitting terminal always points in the direction of the transmitting terminal.

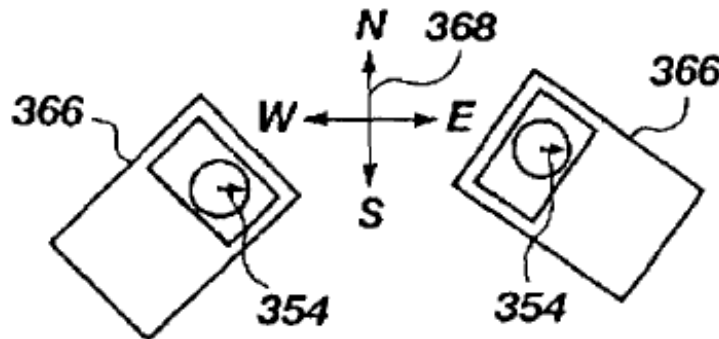


Fig. 5C

Norris describes the terminal includes a compass to provide directional orientation information, so that as the user of one terminal turns in a circle, the display (arrow 354, indicating a direction to the other terminal) will always be oriented so that it points in the actual direction of the other terminal. ASUS-1010, 7:21-44.

Norris also describes that the distance to the other terminal can be displayed on the display screen. ASUS-1010, 7:48-53. Norris describes a “grid” display wherein the position of the other terminal is displayed overlaid on a “display of concentric circles relating to distance and angle from the receiving terminal. ASUS-1010, 8:7-21. This is illustrated in Fig. 6:

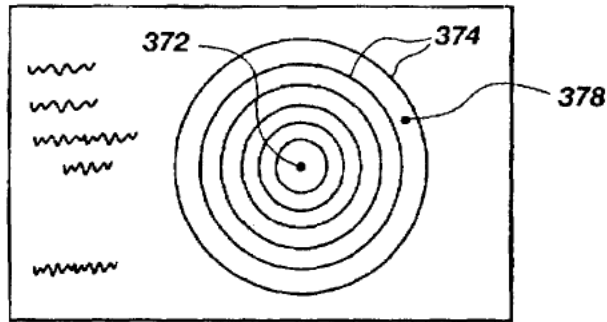


Fig. 6

The angular elements of this “grid” display, while not shown in Figure 6, are indicated in Fig. 5B, which is an enlargement of a portion of Figure 5A. In Fig. 5B the angular direction in degrees is indicated by tick marks that represent radial lines drawn from the center of the (polar coordinate) grid to provide angular information for the arrow 358. Figure 5A and 5B are reproduced below for reference.

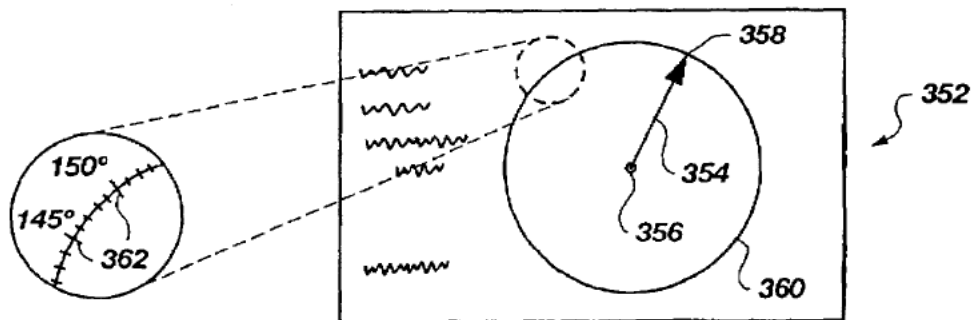


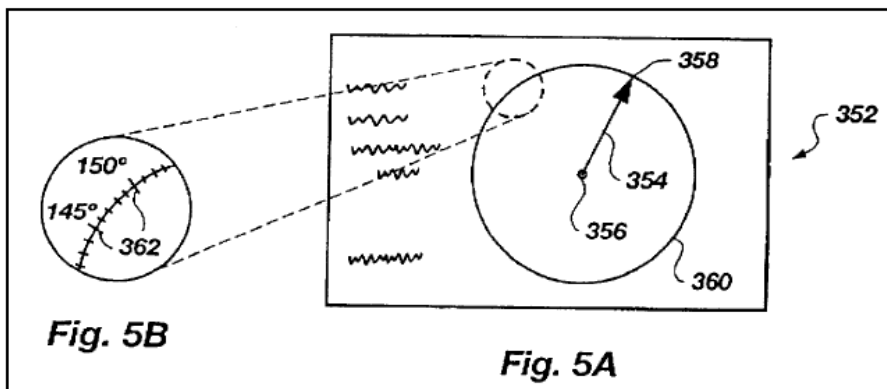
Fig. 5B

Fig. 5A

To the extent that the Board finds that Norris does not disclose a line between starting and ending points, Colley does. Colley discloses this element as described in Ground 2.

5. “A portable terminal, with the function of walking navigation according to Claim [1/5/10], wherein said device for getting direction information gets information of a direction pointed by the tip[s] of said portable terminal[, as well as an angle of elevation]” (Claims 2, 6, 11, and 12)

Norris discloses that the calculated direction information represents the direction of the tip of the portable navigation device, as calculated by an internal compass and as shown in Figs. 5A-B below. ASUS-1003, § IX.E.iii.b; ASUS-1010, 7:2-12.



Norris describes that as the device is rotated, the displayed arrow will stay pointing at the other GPS device, and thus the display will change as the device orientation changes, and the direction information thus represents the direction of the tip of the device. ASUS-1010, 7:30-43; *see also* Fig. 5C.

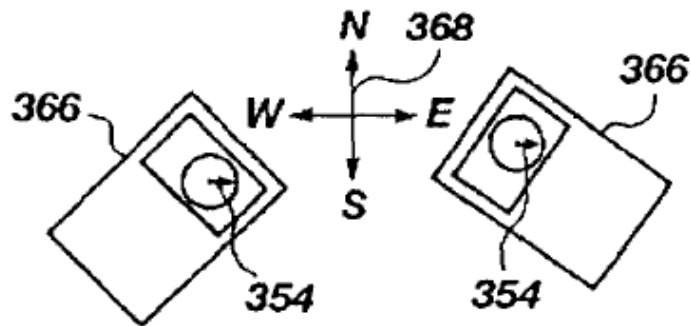


Fig. 5C

Colley further discloses these elements as described in Ground 2.

6. “A portable terminal, with the function of walking navigation according to Claim [1/5/10] wherein said device for getting direction information gets orientation information of a display of said portable terminal” (Claims 3, 7, and 13)

Norris discloses getting direction information of the tip of the device as disclosed in connection with Claims 2, 6, 11, and 12. It would implicitly also get information regarding the orientation of the display of the system, which would be rigidly connected to the tip of a device via the main body of the disclosed GPS terminals. ASUS-1003, § IX.E.iv.b.

Colley further discloses this element as described in Ground 2.

7. “wherein a local route around said present place is shown with a bent line and a direction of movement is shown with an arrow on said bent line to supply route guidance information as said walking navigation information” (Claim 5).

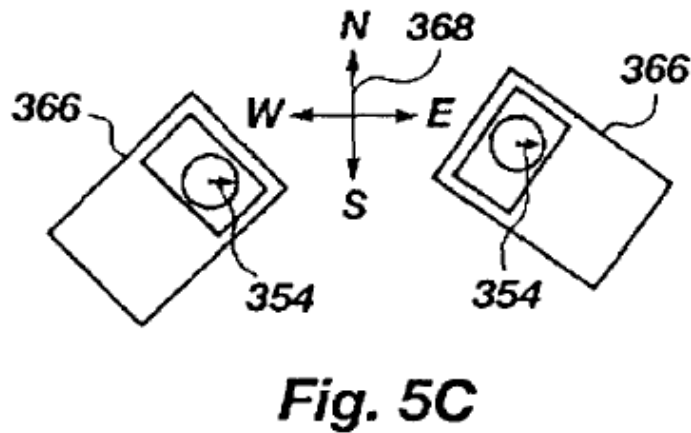
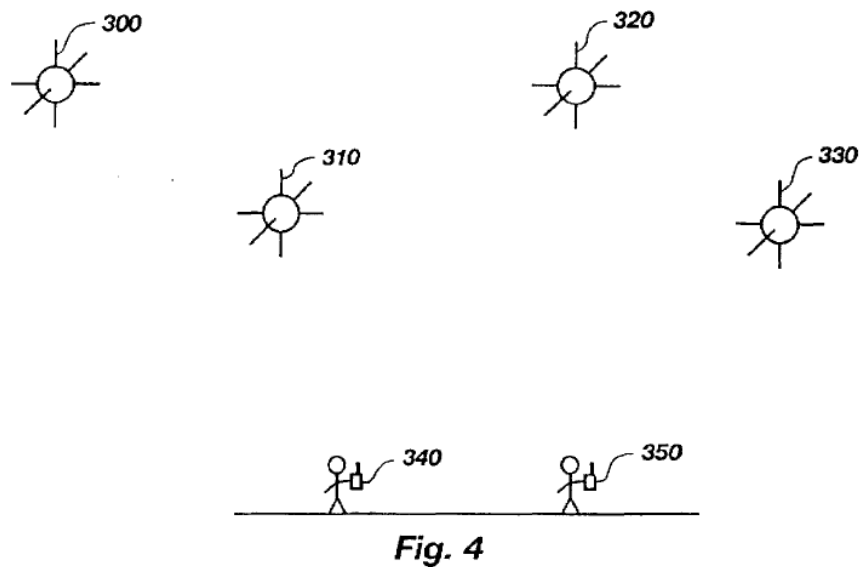
Colley discloses this element as described in Ground 2. It would be obvious to a POSITA to modify Norris with the display system taught in Colley to allow multiple waypoints to get to a partner’s mobile terminal, for more accurate route guidance and for avoiding geographic obstacles. *See* ASUS-1003, § IX.E.vi.d-e.

8. “wherein location of a user of said portable terminal is determined according to said location information and said direction information” (Claims 4, 9, and 10)

Norris and Colley further discloses this element as described in connection with the “getting location information” and “getting direction information” elements described above in connection with claims 1, 5, and 10. *See also* ASUS-1003, § IX.E.v.b. Since the portable terminals of both Norris and Colley are described as being used by users who are walking, it is inherent that the location of the user would be the same as the calculated location of the portable terminal. To the extent the determination of the user’s location also requires the determination of the user’s direction, that is disclosed in connection with the “getting direction information” elements discussed *infra*.

9. “and wherein location of partner of the user is determined according to a location information from the partner's portable terminal” (Claims 4, 9, and 10)

Norris discloses a device for getting a location information of another portable terminal from said another terminal via connected network. ASUS-1003, § IX.E.v.c. Specifically, Norris discloses a radio receiver that is tuned to the transmission frequency of the other terminal, so that it can receive broadcast of position from the other terminal. *See* ASUS-1010, 9:32-37; 9:43-45 (“In addition, the second device 450 has an RF receiver 475 for receiving the transmitted location of the first GPS device 400.”); 6:49-57; 7:13-16 (“Returning now to the system of GPS devices, the second GPS device 350 is constantly receiving updated telemetry data from the first GPS device 340 and from the GPS satellites 300, 310, 320, 330 overhead.”); 7:56-65. As illustrated in Figs. 4 and 5C, two users of identical portable terminals can receive location information from their partner’s portable terminal and implicitly calculate that partner’s location on their own device.



A POSITA would understand that “telemetry,” as described above in relation to a radio signal would be a wireless connection, and both GPS devices 340 and 350 would be thus connected by a wireless link. ASUS-1003, ¶ 485.

H. Ground 5: Claims 1-2, 5-6, 8, and 10-12 Are Unpatentable Under 35 U.S.C. §103 as Obvious over the Combination of Norris, Nosaka, and Colley

Norris, Nosaka, and Colley disclose the elements of each of these claims as discussed in Grounds 1, 2, and 4. A POSITA would have been motivated to combine these references as discussed in Section VII.C.6. ASUS-1003, § IX.F.viii.

I. Ground 6: Claims 1-2, 5-6, 8, 10, and 12 Are Unpatentable Under 35 U.S.C. §103 as Obvious over the Combination of Norris, Colley, and Ellenby.

1. “A portable terminal, with the function of walking navigation” (Claims 1, 5, and 10).
2. “a device for getting location information denoting a present place of said portable terminal” (Claims 1, 5, and 10)
3. “wherein a local route around said present place is shown with a bent line and a direction of movement is shown with an arrow on said bent line to supply route guidance information as said walking navigation information” (Claim 5).
4. “wherein location of a user of said portable terminal is determined according to said location information and said direction information” (Claims 4, 9, and 10)
5. “and wherein location of partner of the user is determined according to a location information from the partner's portable terminal” (Claims 4, 9, and 10)

Norris and Colley disclose each of the above-listed elements as discussed in Grounds 2 and 4.

6. “a device for getting direction information denoting an orientation of said portable terminal” (Claims 1, 5, and 10)

7. “A portable terminal, with the function of walking navigation according to Claim [1/5/10], wherein said device for getting direction information gets information of a direction pointed by the tip[s] of said portable terminal[, as well as an angle of elevation]” (Claims 2, 6, and 12)

Norris and Colley disclose each of these elements as discussed in Grounds 2 and 4. Ellenby discloses each of these elements as discussed in Ground 3. A POSITA would have been motivated to combine these references as discussed in Section VII.C.6. ASUS-1003, § IX.G.viii.

VIII. CONCLUSION

For the foregoing reasons, Petitioners ask that the Board institute *inter partes* review of U.S. Patent No. 6,430,498 and cancel the Challenged Claims.

October 16, 2018
Date

By / Christopher TL Douglas /
Christopher TL Douglas (Reg. No. 56,950)

CERTIFICATION UNDER 37 C.F.R. § 42.24

Pursuant to 37 C.F.R. §42.24(d), I certify that this petition complies with the type-volume limits of 37 C.F.R. §42.24(a)(1)(i) because it contains 13955 words, according to the word-processing system used to prepare this petition and by manually counting words in annotated figures, excluding the parts of this petition that are exempted by 37 C.F.R. §42.24(a) (including the table of contents, a table of authorities, mandatory notices, a certificate of service or this certificate word count, appendix of exhibits, and claim listings).

October 16, 2018
Date

By / Christopher TL Douglas /
Christopher TL Douglas (Reg. No. 56,950)

CERTIFICATE OF SERVICE

I hereby certify, pursuant to 37 C.F.R. §§42.6 and 42.105, that a complete copy of the attached **PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 6,430,498**, including all exhibits and related documents, are being served via electronic service (as agreed by counsel for Patent Owner on October 15, 2018) on the 16th day of October, 2018, the same day as the filing of the above-identified document in the United States Patent and Trademark Office/Patent Trial and Appeal Board, upon the Patent Owner by serving the following email addresses with instructions for electronically accessing said Petition and exhibits:

JBeaber@mayerbrown.com

BNese@mayerbrown.com

JFussell@mayerbrown.com

ASBonner@mayerbrown.com

RPluta@mayerbrown.com

SSiddiqui@mayerbrown.com

Maxell-Asus-Service@mayerbrown.com

October 16, 2018
Date

By / Christopher TL Douglas /
Christopher TL Douglas (Reg. No. 56,950)