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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/592,893	11/03/2006	Kiyoshi Ueyoko	DN2006154	2560

27280 7590 01/12/2012
THE GOODYEAR TIRE & RUBBER COMPANY
INTELLECTUAL PROPERTY DEPARTMENT 823
1144 EAST MARKET STREET
AKRON, OH 44316-0001

EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1747

MAIL DATE	DELIVERY MODE
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01/12/2012

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KIYOSHI UEYOKO, ROBERT JOHN BOEHLEFELD,
MAURE ELLEN KNAVISH, and LARRY LEE MERSHON

Appeal 2011-006116
Application 11/592,893
Technology Center 1700

Before HUBERT C. LORIN, CATHERINE Q. TIMM, and
DEBORAH KATZ, *Administrative Patent Judges*.

KATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

The rejection of claims 1 and 3-17 under 35 U.S.C. § 134 was brought by the named inventors and the real party-in-interest, Goodyear Tire & Rubber Company. (App. Br. 3.) Claims 2 and 18 were previously cancelled. (*Id.*) We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

The Examiner maintained the following rejections:

- Claims 1, 3, 5-7, 10-14, and 18 under 35 U.S.C. § 103(a) over Iwata¹, Ueyoko², and Reuter³;
- Claims 4, 8, 9, 15, and 17 under 35 U.S.C. § 103(a) over Iwata, Ueyoko, Reuter, and Fritsch⁴; and
- Claim 16 under 35 U.S.C. § 103(a) over Iwata, Ueyoko, Reuter, Fritsch, and Suzuki⁵.

Appellants do not argue for the separate patentability of claims 1, 3, 5-7, 10-14, and 18 under 35 U.S.C. § 103(a) over Iwata, Ueyoko, and Reuter. We focus on claim 1 in our review. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Appellants' claim 1 recites:

A pneumatic tire having a carcass and a belt reinforcing structure, the belt reinforcing structure comprising:
a composite belt structure of cord reinforced layers including a radially inner layer of cord having an angular orientation of 5 degrees or less with the circumferential direction,
and a radially outer layer of cord having an angular orientation of 5 degrees or less with the circumferential

¹ U.S. Patent No. 4,702,293, issued October 27, 1987.

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⁴ U.S. Patent No. 6,601,378 B1, issued August 5, 2003.

⁵ U.S. Patent No. 4,161,203, issued July 17, 1979.

direction, wherein the radially outer layer has a width greater than the radially inner layer,

and a zigzag belt reinforcing structure forming two layers of cords, the cords inclined at 5 to 30 degrees relative to the centerplane of the tire extending in alternation to turnaround points at each lateral edge,

wherein the zigzag belt structure is arranged between the radially inner layer and the radially outer layer, and wherein the radially inner layer is wider than said zigzag belt reinforcing structure,

and further comprising a second radially inner layer having an angular orientation of 5 degrees or less with the circumferential direction located radially inwards of said zigzag belt reinforcing structure.

(App. Br. 8, Claims App'x.)

Figure 2 of Appellant's specification depicts a zig-zag reinforcing structure and is reproduced below.

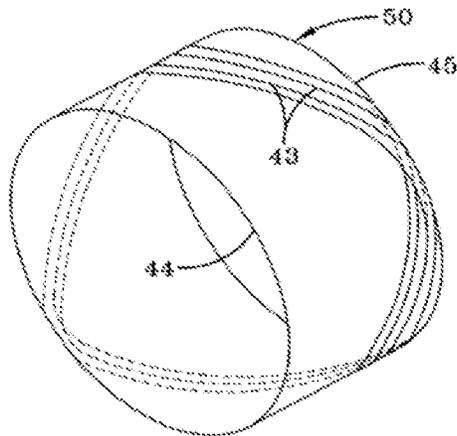


FIG-2

Figure 2 depicts the zig-zag structure 50 with a rubberized strip of one or more cords 43⁶, which are wound in a generally circumferential direction, but inclined to some extent so that they extend between the lateral edges 44 and 45, forming a zig-zag path. (Spec. ¶ [0015].)

Figure 4 of Appellants' specification depicts an embodiment of the claimed tire and is reproduced below.

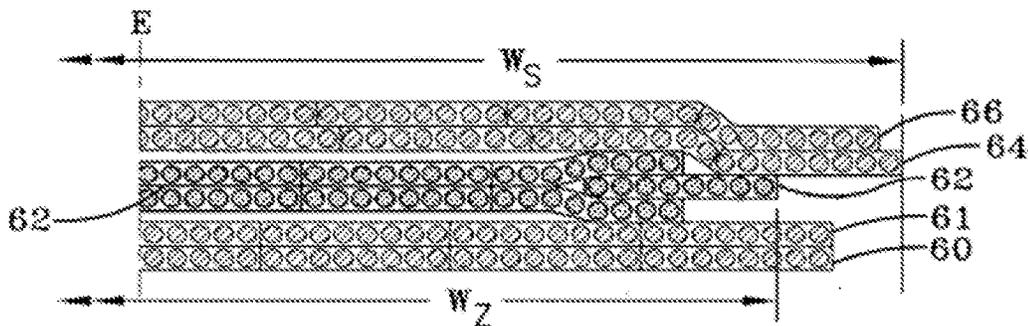


FIG-4

Figure 4 depicts two inner spirally wound layers 60 and 61, an inner zigzag layer structure 62, and two radially outer spirally wound belt layers 64 and 66. (Spec. ¶ [0021].) As depicted, the outer spirally wound layers 64 and 66 are wider than the inner spirally wound layers 60 and 61.⁷ (*Id.*)

⁶ Appellants' specification indicates that the one or more cords are element 46, while the rubberized strip is element 43. (Spec. ¶ [0015].) No element 46 is apparent in Figure 2, but element 43 seems to indicate chord structures. Accordingly, we assume that element 43 indicates chords and not the rubberized strip, which has no number in the figure, but is likely the structure on which the cords are wound.

⁷ We note that though Appellants reference Figures 5 and 6 as support for claim 1 in the Summary of Claimed Subject Matter (App. Br. 3), the inner spirally wound layers are depicted as being wider than the outer spirally wound layers in those figures (*see, e.g.,* Spec. ¶ [0025]), in contrast to the limitations of claim 1.

Iwata teaches a pneumatic tire with multiple layers of cords and plies. (Iwata, col. 1, l. 62, through col. 2, l. 12; *see* Ans. 3-4.) Figure 1 of Iwata is reproduced below.

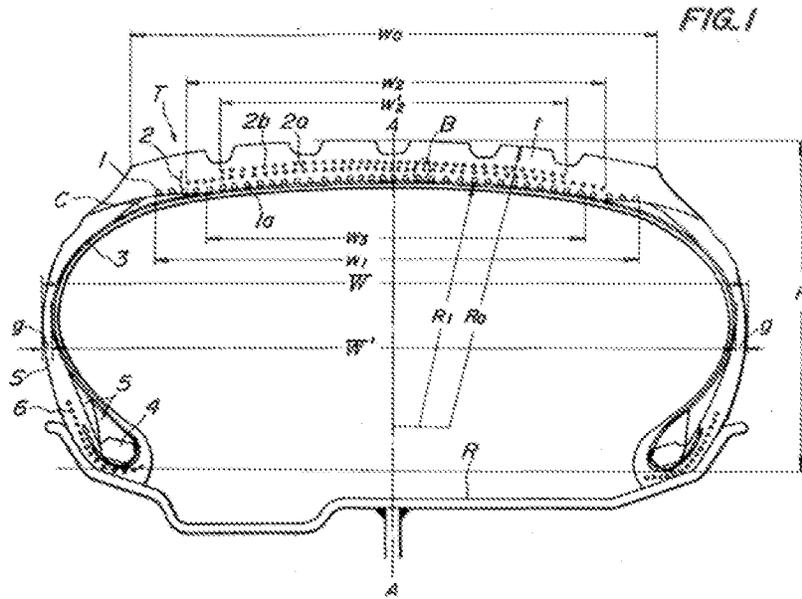


Figure 1 depicts a sectional view of a tire with a carcass 3, and a composite belt B. Belt B includes two layers:

- a layer identified as layer 1 and referred to as the “second belt layer,” which comprises steel cords 1a and is “substantially parallel to the equatorial plane of the tire,” that is, zero degrees (Iwata, col. 53-58); and
- a layer identified as layer 2 and referred to as the “first belt layer,” which comprises two cord plies containing steel cords 2a and 2b and is “arranged at an inclination angle of 20° with respect to the equatorial plane of the tire . . . (*id.*, col. 3, ll. 58-62).

Ueyoko teaches a pneumatic tire with a reinforcing belt (“breaker”) 7 located radially outside of the band 9 and carcass 6 of the tire (Ueyoko, col. 2, ll. 48-52 and col. 3, ll. 12-13). The breaker 7 is a double-layered cord

structure wound multiple times in a zig-zag pattern. (Ueyoko, col.3, ll. 12-13 and 21-25, col. 4, ll. 9-18; *see* Ans. 4.) Figure 2 is reproduced below.

Fig. 2

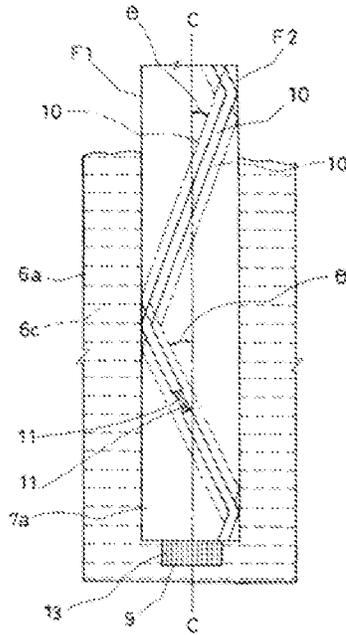


Figure 2 depicts the zig-zag pattern of the wound tape 10 forming the breaker 7. Ueyoko teaches that the zig-zag pattern improves durability by avoiding breaker edge loosening. (Ueyoko, col. 3, ll. 26-27.)

The Examiner concluded that it would have been obvious to those of skill in the art to have substituted “layer 2” of Iwata with a zig-zag layer as taught in Ueyoko. (Ans. 8.) The substitution would have eliminated cut ends and, thus, avoided belt separation. (*Id.*)

Reuter teaches pneumatic tires with a reinforcing member disposed radially outwardly of a belt assembly. (Reuter, col. 1, ll. 13-23.) The reinforcing member, or “overlay ply,” has cords “oriented at small angles with respect to the mid-circumferential plane of the tire” and has a width

“about equal to the widest of the belt plies.” (*Id.*) The Examiner concluded that those of skill in the art would have considered it obvious to use the overlay ply of Reuter as a radially outer layer because it would improve high speed tire durability, as taught in Reuter. (Ans. 4.)

In summary, the Examiner concluded that those of skill in the art would have found it obvious to modify the pneumatic tire of Iwata by substituting “layer 2” with the zig-zag belt of Ueyoko and by adding the overlay ply of Reuter as the radially outer layer. (Ans. 7-8.)

Appellants argue first that Iwata fails to teach the claim limitations of a radially outer layer having cords with an angular orientation of 5 degrees or less and of being wider than the radially inner layer. (App. Br. 5-6.) According to Appellants “layer 2” of Iwata is the radially outer layer and it had cords arranged at an inclination angle of 20° with respect to the equatorial plane. (App. Br. 5-6.) Further according to Appellants, Iwata teaches that this radially outer layer of Iwata is narrower than the radially inner layer (layer 1). (*Id.*)

The Examiner’s conclusion about the modification of the tire of Iwata by adding the overlay ply of Reuter is reasonable. Thus, it is reasonable that those of skill in the art would have considered a pneumatic tire with a radially outer layer having cords of angular orientation of 5 degrees or less and being wider than a radially inner layer to have been obvious. Appellant has not directed us to persuasive evidence that such a modification would have been beyond the skill of those in the art.

Appellants also argue that Ueyoko teaches that the zigzag belt must be wider than the low angle spiral band, citing Figure 1 and claim 1 of Ueyoko. (App. Br. 6.) Appellants assert that these disclosures put Ueyoko in direct

conflict with the teaching of Iwata and Appellants' claims and teach away from them. (App. Br. 6.) We agree with the Examiner that Ueyoko does not limit the zig-zag belt to the arrangement in Figure 1 or the embodiment of claim 1.

What a reference teaches or suggests must be examined in the context of the knowledge, skill, and reasoning ability of a skilled artisan. What a reference teaches a person of ordinary skill is not . . . limited to what a reference specifically 'talks about' or what is specifically 'mentioned' or 'written' in the reference. Under the proper legal standard, a reference will teach away when it suggests that the developments flowing from its disclosures are unlikely to produce the objective of the applicant's invention.

Syntex (U.S.A.) LLC v. Apotex, Inc. 407 F.3d 1371, 1380 (Fed. Cir. 2005). Appellants do not point to, and we do not find, specific language in Ueyoko that would discourage one from having a zig-zag layer that is narrower than the other layers of the tire. While Ueyoko discloses a width preference of 0.8 to 1.0 times the tread width, which results in a preference for a breaker (zig-zag layer) that is the same or smaller in width than the band 9 (Ueyoko, col. 2, ll. 56-57 and col. 3, ll. 18-19), the preference is merely that, a preference. Preferred embodiments do not constitute a teaching away from a broader disclosure. *In re Susi*, 440 F.2d 442, 446 n.3 (CCPA 1971).

Appellants put forth the same arguments against the rejections of claims 4, 8, 9, 15, and 16 that they asserted against the rejection of claim 1. (App. Br. 7.) As discussed above, these arguments are not persuasive. Though Appellants assert that "there is no teaching in any of the cited references to support the selective combination of elements from the references in the manner proposed as obvious" (App. Br. 7), this statement is

not sufficiently specific to direct us to an error in the Examiner's *prima facie* case for obviousness.

ORDER

Upon consideration of the record and for the reasons given, the rejection of claims 1, 3, 5-7, 10-14, and 18 under 35 U.S.C. § 103(a) over Iwata, Ueyoko, and Reuter is sustained; the rejection of claims 4, 8, 9, 15, and 17 under 35 U.S.C. § 103(a) over Iwata, Ueyoko, Reuter, and Fritsch is sustained; and the rejection of claim 16 under 35 U.S.C. § 103(a) over Iwata, Ueyoko, Reuter, Fritsch, and Suzuki is sustained.

Therefore, we affirm the decision of the Examiner.

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

AFFIRMED

tc



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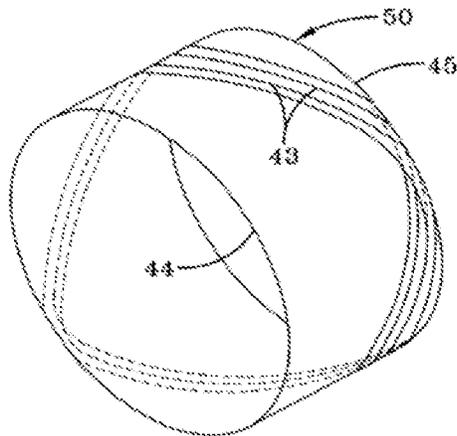


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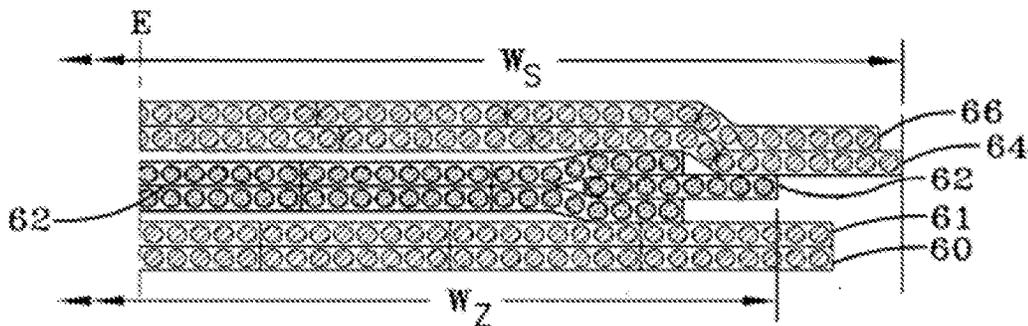


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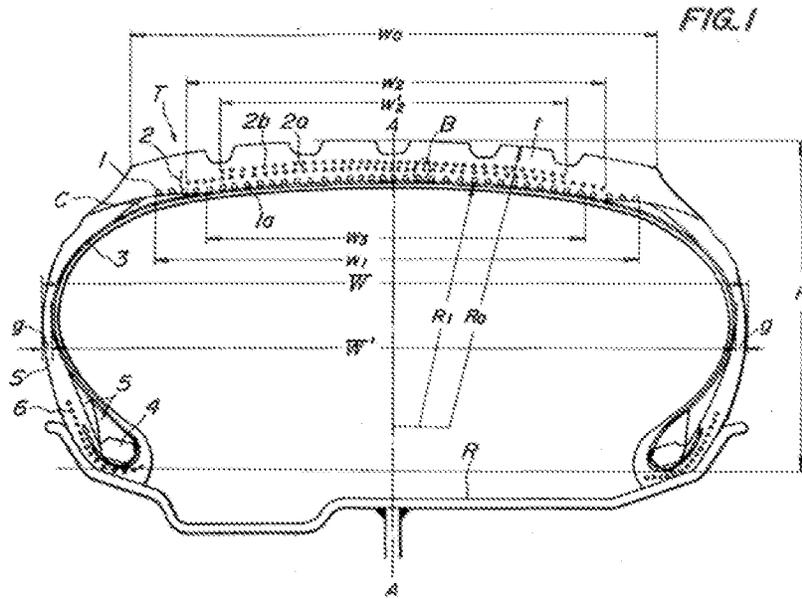


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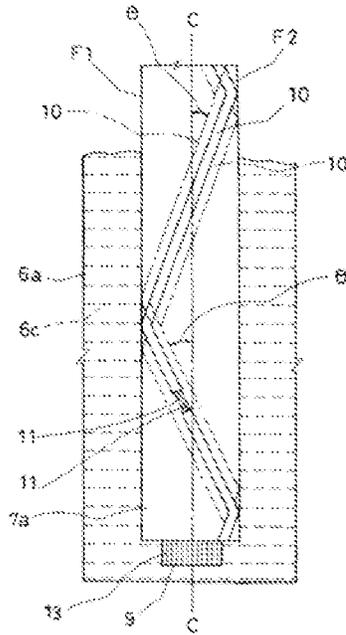


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Therefore, we affirm the decision of the Examiner.

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

AFFIRMED

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Director of the United States Patent and Trademark Office

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THE GOODYEAR TIRE & RUBBER COMPANY

INTELLECTUAL PROPERTY DEPARTMENT 823 Appeal No: 2011-006116

1144 EAST MARKET STREET

Application: 11/592,893

AKRON, OH 44316-0001

Appellant: Kiyoshi Ueyoko et al.

Board of Patent Appeals and Interferences Docketing Notice

Application 11/592,893 was received from the Technology Center at the Board on February 28, 2011 and has been assigned Appeal No: 2011-006116.

In all future communications regarding this appeal, please include both the application number and the appeal number.

The mailing address for the Board is:

BOARD OF PATENT APPEALS AND INTERFERENCES
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. BOX 1450
ALEXANDRIA, VIRGINIA 22313-1450

The facsimile number of the Board is 571-273-0052. Because of the heightened security in the Washington D.C. area, facsimile communications are recommended. Telephone inquiries can be made by calling 571-272-9797 and referencing the appeal number listed above.

By order of the Board of Patent Appeals and Interferences.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 11/592,893
Filing Date: November 03, 2006
Appellant(s): UEYOKO ET AL.

June Rickey
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 1, 2010 appealing from the Office action mailed March, 2010.

Art Unit: 1747

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1 and 3-17 remain pending in the application. Claims 1 and 3-17 stand rejected. Claims 2 and 18 were previously cancelled.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

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subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

4702293	IWATA	10-1987
6116311	UEYOKO	9-2000
6799618	10/2004	REUTER
6601378	FRITSCH	08-2003
4161203	SUZUKI	07-1979

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 3, 5-7, 10-14, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata and further in view of Ueyoko, and Reuter.

As best depicted in Figure 1, Iwata teaches a tire construction including a radial carcass 3 and a composite belt, wherein said belt includes a radially inner layer 2 formed of circumferentially-oriented cords and a pair of belt reinforcing plies 1 having cords inclined at 20 degrees with respect to the equatorial plane of the tire (Column 3, Lines 50+). The reference further teaches that (a) radially inner layer 2 can be formed

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with a second radially inner layer (Column 5, Lines 35+) and (b) radially inner layer(s) have a larger width than the overlying belt reinforcing plies.

The reference, however, fails to describe the belt reinforcing plies as being a “zig-zag” structure. It is well known, though, to form such belt plies as a “zig-zag” structure in order to eliminate the presence of cut ends at the respective ends of the belt plies and eliminate/reduce belt edge separation, as shown for example by Ueyoko (Column 3, Lines 20-30). It is emphasized that the tire of Ueyoko is extremely similar to that of Iwata in that both tire constructions include a radially inner zero degree ply and a pair of radially outermost belt reinforcing plies. Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to form the belt reinforcing plies of Iwata in accordance to the claimed invention.

Lastly, regarding claim 1, the tire of Iwata fails to include a radially outer layer formed of zero degree cords. In any event, it is extremely well known to include radially outer layers or overlays in order to improve high speed tire durability, as shown for example by Reuter (Column 1, Lines 10-20). Furthermore, such a modified tire would include a radially outer layer or overlay having a width greater than the width of the radially inner layer (in view of Reuter since radially outer layer is disclosed as being wider than entire underlying belt structure).

Regarding claim 3, the radially outer layer is slightly wider than the zigzag belt structure and such an assembly is seen to satisfy the claimed limitations. Additionally,

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as noted above, the radially inner layer or band can have a larger width than the zigzag breaker structure.

With respect to claim 5, Iwata suggests the use of aramid cords (Column 2, Lines 13+).

Regarding claim 6, as detailed above, the tire of Iwata includes a plurality of radially inner layers. Furthermore, Reuter teaches the inclusion of a plurality of radially outer layers (Column 5, Lines 54+). In regards to the presence of two zig-zag structures (each having two plies or layers of cords), Iwata suggests the presence of at least two belt reinforcing plies. As such, one of ordinary skill in the art at the time of the invention would have found it obvious to modify a four ply structure of Iwata in view of Ueyoko (include zigzag structure in order to eliminate presence of cut ends).

As to claim 7, Iwata is broadly directed to heavy duty pneumatic tire constructions- such a disclosure would include aircraft tire constructions.

Regarding claim 10, the carcass of Iwata can be formed of nylon (Column 2, Lines 13+).

As to claim 11, the radially inner belt layer has ends located "near" the center of the belt (the language "near" is broad and does not adequately define the structure over that of Iwata).

With respect to claims 12-14, the claims are directed to the method of applying the belt layers and thus do not further define the structure of the claimed tire. With specific respect to claim 12, the exact positioning of the winding ends (start and finish)

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would have been well within the purview of one of ordinary skill in the art absent any conclusive showing of unexpected results.

Claims 4, 8, 9, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata, Ueyoko, and Reuter as applied in claim 1 above and further in view of Fritsch.

In regards to the cords used to form the belt layers, Iwata Ueyoko suggests the use of a wide variety of materials, including nylon and aramid/Kevlar®. The language, however, clearly suggests that nylon and polyamide are exemplary and one of ordinary skill in the art at the time of the invention would have found it obvious to use any of the known belt reinforcing materials, such as hybrid cords formed of aramid and nylon, as shown for example by Fritsch (Column 3, Lines 30+ and Column 6, Lines 10-20). In particular, Fritsch teaches that such hybrid cords have excellent properties, while reducing manufacturing costs (Column 1, Lines 10-15). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to use the claimed hybrid cord. It is emphasized that Iwata in view of Ueyoko is primarily concerned with the structure of the above noted belt layers and the reference places no criticality on the specific materials used to form said belt layers.

With respect to claims 8 and 17, as noted above, Fritsch suggests the use of a hybrid cord formed of aramid (polyamide) and nylon, which is the same as that required by the claimed invention. One of ordinary skill in the art at the time of the invention would have expected the hybrid cord of Iwata and Ueyoko in view of Fritsch to

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demonstrate the same properties and applicant has not provided a conclusive showing of unexpected results.

As to claim 15, Fritsch suggests the use of hybrid cords in a carcass and/or belt assembly.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata, Ueyoko, Reuter, and Fritsch as applied in claim 5 above and further in view of Suzuki.

While Iwata is silent with respect to the properties of the belt topping rubber, the claimed values are consistent with the conventional values associated with belt layers. Suzuki (Column 10, Lines 44+) provides one example of a tire assembly in which a belt topping rubber has a 300% modulus between approximately 10 and 25 MPa, which is nearly identical to the claimed range. Lastly, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed rubber properties.

(10) Response to Argument

Applicant initially argues that Iwata teaches a tire construction in which the radially outer belt layer 2 has a width less than the radially inner belt layer 1, while claim 1 requires that the radially outer belt layer has a width greater than the radially inner layer and includes cords inclined at 5 degrees or less with respect to the circumferential direction of the tire.

As detailed above, Iwata teaches a tire construction including at least one radially innermost belt layers 1 having a zero degree inclination with respect to the circumferential direction of the tire (analogous to claimed radially inner layer and second

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radially inner layer) and a pair of crossed belt layers 2, wherein said radially inner layer(s) 1 are wider than the overlying crossed belt plies 2. In view of Ueyoko, one would have found it obvious to form the pair of cross belt layers as a zigzag structure in order to eliminate the presence of cut ends and belt edge separation (Column 3, Lines 20-30). Thus, the belt layers 2 in Iwata in view of Ueyoko represent the claimed zigzag structure, not the radially outer layer as argued by applicant. Reuter further motivates one to include a well known and conventional overlay at a radially outermost position (analogous to claimed radially outer layer formed with cords that are inclined at 5 degrees or less with respect to the circumferential direction of the tire) in order to, among other things, improve high speed durability (Column 1, Lines 10+). In such a instance, the overlay is described and depicted as fully covering the underlying belt structure and thus, in modifying Iwata, one would have found it obvious to form such a radially outer layer with a width greater than the underlying belt structure (radially inner layers and the zigzag structure). It is emphasized that such an arrangement is consistent with known arrangements in which outermost layers fully cover and thus protect the underlying belt structure (e.g. against penetration of objects).

Applicant further argues that Ueyoko clearly teaches that the zigzag belt is wider than the underlying low angle, spiral band, which is in direct conflict with the arrangement of Iwata.

The teachings of Ueyoko regarding the elimination of cut ends, however, are independent of the width of an underlying circumferential belt layer. It is well known in the tire industry that the presence of cut ends results in belt end separation and such a

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recognition is independent of the presence of a circumferential belt layer. A fair reading of Ueyoko does not suggest the exclusive use of a zig zag belt structure to eliminate cut ends in a tire assembly including a radially innermost circumferential belt layer having a specific width. One of ordinary skill in the art at the time of the invention would have equally found it obvious to modify a hypothetical tire construction simply including first and second cut end plies (in the absence of a circumferential belt layer). It is emphasized that the elimination of belt end separation is desirable in a wide variety of tire constructions, including that disclosed by Iwata, and Ueyoko in no way teaches away from using a zig zag structure with a circumferential belt having an axial width of Iwata (cut ends are present independent of the axial width of the circumferential belt or for that matter, independent of the mere presence of a circumferential belt layer).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Justin Fischer

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