

The opinion in support of the decision being entered today  
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* THOMAS STEPHEN WARCHOL,  
TIMOTHY ROBERT RICHARDS, and  
RONALD LAWRENCE LOEFFLER

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Appeal 2007-0163  
Application 10/318,898  
Technology Center 1700

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Decided: June 26, 2007

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Before CHUNG K. PAK, CATHERINE Q. TIMM, and  
LINDA M. GAUDETTE, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 1 through 12, all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. §§ 6 and 134 (2006).

## STATEMENT OF THE CASE

The subject matter on appeal is directed to a radial ply pneumatic truck tire having a circumferential decoupling groove designed to prevent irregular tread wear, particularly in the shoulder region of the tread (Specification 1-2). Further details of the appealed subject matter are recited in representative claims 1 and 7 reproduced below:

1. A pneumatic radial ply truck tire for use on steering axles, comprising a tread, a casing, the casing having two sidewalls, one or more radial plies extending from and anchored to two annular beads, a belt reinforcement structure located radially between the tread and the plies, the tire characterized by the tread having a plurality of circumferentially continuous grooves, a pair of radially recessed ribs, the radially recessed ribs being radially recessed and non-road contacting under static load, a pair of full radius circumferentially continuous decoupling grooves, one full radius circumferentially continuous decoupling groove being adjacent each recessed rib, and a plurality of tread ribs, including a pair of shoulder ribs, one shoulder rib being adjacent each circumferential decoupling groove, the radially outer surfaces of the plurality of tread ribs defining a radially outer tread surface, the outer tread surface being adjacent to and extending between the pair of full radius circumferential decoupling grooves, the distance halfway between the decoupling grooves defining the centerline of the tread, in a cross section of the tread, the radially outer tread surface has a maximum diameter  $D$  at the tread centerline and a constant radius of curvature  $R$ ,  $R$  extending laterally toward each circumferential decoupling groove, the constant radius of curvature  $R$  originating on the centerline of the tread, the axial width of the tread being  $W$  as measured between lateral edges of the shoulder ribs; the belt structure having a plurality of belt layers, a first radially inner belt layer, a second intermediate belt layer, a third intermediate belt layer and a radially outer belt layer each belt layer having an axially outer end; and

wherein each decoupling groove is defined by an axially innermost sidewall intersecting an axially outermost ground-contacting edge of the tread and an axially outer rib of reduced radial height, the groove further has a full radius of curvature  $R_G$ ,  $R_G$  being at least 2.0 mm and at a point  $C$

centered on the bottom of the full radius of curvature  $R_G$  a line K drawn through the center C and to the axially outermost end of the belt layers extends axially inward from C and measures at least 10 mm and each axially outer end of the remaining belt layers is spaced greater than 10 mm from the center C.

7. A pneumatic radial ply truck tire for use on steering axles, comprising a tread, a casing, the casing having two sidewalls, one or more radial plies extending from and anchored to two annular beads, a belt reinforcement structure located radially between the tread and the plies, the tire characterized by the tread having a plurality of circumferentially continuous grooves, a pair of radially recessed ribs, the radially recessed ribs being radially recessed and non-road contacting under static load, a pair of full radius circumferentially continuous decoupling grooves, one full radius circumferentially continuous decoupling groove being adjacent each recessed rib, and a plurality of tread ribs, including a pair of shoulder ribs, one shoulder rib being adjacent each circumferential decoupling groove, the radially outer surfaces of the plurality of tread ribs defining a radially outer tread surface, the outer tread surface being adjacent to and extending between the pair of full radius circumferential decoupling grooves, the distance halfway between the decoupling grooves defining the centerline of the tread, in a cross section of the tread, the radially outer tread surface has a maximum diameter D at the tread centerline and a constant radius of curvature R, R extending laterally toward each circumferential decoupling groove, the constant radius of curvature R originating on the centerline of the tread, the axial width of the tread being W as measured between lateral edges of the shoulder ribs; the belt structure having a plurality of belt layers, a first radially inner belt layer, a second intermediate belt layer, a third intermediate belt layer and a radially outer belt layer each belt layer having an axially outer end; and

wherein each decoupling groove has a full radius of curvature  $R_G$  and is defined by an axially innermost sidewall extending to an axially outermost ground-contacting edge of the tread shoulder rib and an axially outer recessed rib of reduced radial height,  $R_{\sim}$  having a point C centered on the bottom of the full radius of curvature and wherein a line K drawn through the center C and to the axially outermost end of the belt layers extends

axially inward from C and is parallel to a line J extending from the axially outermost edge of each tread shoulder rib parallel to K.

The Examiner has relied upon the following references in rejecting the claims on appeal:

Travers	US 3,253,635	May 31, 1966
Kishi	US 5,522,442	Jun. 4, 1996
Young	US 5,660,652	Aug. 26, 1997
Ohya	US 5,800,642	Sep. 1, 1998
Nakamura	US 6,681,823 B2	Jan. 27, 2004

The Examiner has rejected the appealed claims as follows:

- 1) Claim 3 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as their invention;<sup>1</sup>
- 2) Claim 7 under 35 U.S.C. § 102(b) as anticipated by the disclosure of Young;
- 3) Claims 1 through 4, 6 through 10, and 12 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Young, Nakamura, and optionally at least one of Travers and Kishi; and
- 4) Claims 5 and 11 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Young, Nakamura, Ohya, and optionally at least one of Travers and Kishi.

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<sup>1</sup> The Examiner has withdrawn the 35 U.S.C. § 112, second paragraph, rejection of claims 1, 2, and 4 through 12 set forth in the final office action dated July 1, 2005 (Answer 4).

## FACTUAL FINDINGS AND ANALYSES

Having carefully reviewed the claims, Specification and prior art, including all of the arguments advanced by both the Appellants and the Examiner, we determine that the Examiner's rejections are well founded based on the factual findings set forth in the Answer and below.

### *Rejection under 35 U.S.C. § 112, Second Paragraph*

The Examiner has determined that claim 3 is indefinite (Answer 5). According to the Examiner, claim 3 is improperly dependent on itself (*id*). In other words, the Examiner has determined that one of ordinary skill in the art would not be able to ascertain the scope of claim 3 as a result of this improper dependency. The Appellants have not specifically challenged this determination (Br. 9-12).<sup>2</sup> Accordingly, we summarily affirm this § 112 rejection.

### *Rejection under 35 U.S.C. § 102(b)*

The Examiner found that Young renders the subject matter defined by claim 7 anticipated within the meaning of 35 U.S.C. § 102(b) (Answer 6). The Examiner found that Young teaches every aspect of the claimed pneumatic radial ply truck tire for use on steering axles (Answer 6-9). In this regard, the Examiner has referred to beads, a tread having a plurality of circumferentially continuous grooves, radially recessed ribs, and a belt reinforcement structure having a first radially inner belt layer, second and

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<sup>2</sup> Claims 4 and 5, by virtue of their dependency on claim 3, suffer from the same defect as claim 3. Thus, in the event of further prosecution, the Examiner should consider extending this § 112 rejection to claims 4 and 5.

third intermediate belt layers, and a radially outer belt layer, which are part of Young's pneumatic radial ply truck tire (Answer 6-7). The Examiner has also referred to Figure 8 of Young as illustrating decoupling grooves having "an axially innermost sidewall extending to an axially outermost ground-contacting edge of the tread shoulder rib and an axially outer recessed rib of reduced radial height" as required by claim 7.

The Appellants only argue that Young does not teach the limitation "wherein a line K drawn through the center C and to the axially outermost end of the belt layers extends axially inward from C and is parallel to a line J extending from the axially outermost edge of each tread shoulder rib parallel to K" recited in claim 7 (Br. 4-5). This limitation appears to define the locations of the belt layers with respect to the decoupling grooves and the tread shoulder ribs.

Therefore, the dispositive question is whether Young teaches such limitation within the meaning of 35 U.S.C. § 102(b). On this record, we answer this question in the affirmative.

As correctly illustrated by the Examiner at page 8 of the Answer, substantial evidence supports the Examiner's finding that Young's Figure 8 shows a structure embraced by the limitation in question. Specifically, Young's Figure 8 shows "an axially outermost end of the belt layers is located axially inward of the curved bottom of the narrow decoupling groove" as required by claim 7 (*id.*). The Examiner correctly found that reciting "lines K and J [in claim 7] fail[s] to require [a] structure different from that disclosed and shown by Young et al." (Answer 9). The

Appellants' arguments directed to Young's Figure 1 do not negate the Examiner's findings discussed above (Br. 4-5).

Accordingly, we concur with the Examiner that Young renders the subject matter recited in claim 7 anticipated within the meaning of 35 U.S.C. § 102(b).

*Rejections under 35 U.S.C. § 103*

The Examiner determined that the combined disclosures of Young, Nakamura, and optionally at least one of Travers and Kishi would have rendered the subject matter defined by claims 1 through 4, 6 through 10, and 12 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 (Answer 9-14).<sup>3</sup> The disclosure of Young is discussed above. The Examiner recognized that Young does not specify the claimed decoupling groove size (full radius) and distance between the bottom center of the decoupling groove and the outer most end of the belt layers (Answer 9-14). To remedy the above deficiencies of Young, the Examiner relied on, *inter alia*, the disclosures of Nakamura and Travers (Answer 9-11). The Appellants contend that no suggestion can be found in any of the prior art relied upon by the Examiner to arrive at the claimed distance and decoupling groove size (Br. 5-9).

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<sup>3</sup> Although we concur with the Examiner that claim 3 is indefinite, we will decide the propriety of the Examiner's § 103 rejection of claims 3, 4, and 5 to avoid piecemeal appellate review in the interest of administrative and judicial economy. *Ex parte Saceman*, 27 USPQ2d 1472, 1474 (Bd. Pat. App. & Int. 1993). For purposes of this decision, we will presume that claim 3 is dependent on either claim 1 or 2.

The dispositive question is, therefore, whether one of ordinary skill in the art would have been led to employ the claimed distance and groove size in question in the tire taught by Young within the meaning of 35 U.S.C. § 103. On this record, we answer this question in the affirmative.

As is apparent from pages 9-11 of the Answer, the Examiner demonstrated that such distance and groove size are result effective variables for the tire of the type discussed in Young. Specifically, the Examiner found (Answer 9-11), and the Appellants have not disputed (Br. 5-9), that:

Nakamura discloses a heavy load pneumatic radial tire for use on trucks comprising a tread, circumferential grooves and a belt having four layers and a fine circumferential groove ("narrow decoupling groove") in the shoulder portion of the tread. The fine groove has an aperture width of 4-12 mm. Nakamura teaches that *if the groove bottom end 54A of the fine groove gets nearer the belt, the deformation of rubber surrounding the belt 6 increases and crack of the rubber from the vicinity of the groove bottom 54A is likely to be generated.* See col. 8 lines 45-67, col. 9 lines 1-8. In order to prevent cracking, Nakamura teaches locating the groove bottom 54A nearer the axially external side of the tire than position W100 and nearer to the tread surface than position D1. See col. 7 lines 18-34. In figure 1, the axially outermost end of the four layer belt is axially inward of position W100. . . .

Travers discloses a pneumatic tire comprising decoupling grooves wherein the tire has decreased rolling effort, improved road holding ability, and greater resistance to wear and tear. See col. 1 lines 43-52, col. 1 lines 70-73, col. 2 lines 1-25, col. 3 lines 27-30. Travers teaches that the decoupling groove 7 should have a width of 4.5 mm to 15 mm for heavy load tire. See col. 3 lines 69-75, col. 4 line 1. Travers also teaches that the bottom of the groove should be rounded rather than angular to avoid splitting of the rubber at the bottom of the groove. See col. 4 lines 7-15. [Emphasis added.]

Given that the claimed distance and groove sizes are shown to be result effective variables, we concur with the Examiner that the determination of the optimum distances and groove sizes, such as those claimed, is well within the ambit of one of ordinary skill in the art. *See In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980) (“[D]iscovery of an optimum value of a result effective variable in known process is ordinarily within the skill of the art.”) However, on this record, the Appellants have not demonstrated that such variables impart unexpected improvements to the claimed tire. *See In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990) (“The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims....These cases have consistently held that in such a situation, the applicant must shown that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range.”)

Accordingly, we concur with the Examiner that Young, Nakamura, and optionally Travers would have rendered the subject matter recited in claims 1 through 4, 6 through 10, and 12 obvious within the meaning of 35 U.S.C. § 103(a).

The Examiner determined that the combined disclosures of Young, Nakamura, Ohya, and optionally at least one of Travers and Kishi would also have rendered the subject matter defined by claims 5 and 11 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 (Answer 14). The disclosures of Young, Nakamura, and Travers are discussed above.

The dispositive question is whether the prior art references relied upon by the Examiner would have suggested employing the claimed tread radius for the truck tire suggested by Young, Nakamura, and Travers. On this record, we answer this question in the affirmative.

As is apparent from its column 5, lines 35-42, Young teaches the tread radius recited in claims 5 and 11. Thus, as pointed out by the Appellants at page 9 of the Brief, Ohya is cumulative to the prior art references relied upon by the Examiner.

Accordingly, we concur with the Examiner that the combined disclosures of Young, Nakamura, Ohya, and optionally Travers would have rendered the subject matter defined by claims 5 and 11 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103.

#### CONCLUSION

For the findings set forth in the Answer and above, the decision of the Examiner is affirmed.

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

AFFIRMED

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