UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOSE HENRIQUE BONALDI, EVANDRO LUIS FRANCISCHETI, SERGIO CHARLES TUBERO, STEVEN ALLAN YOLLICK, NELSON GOSSER JR., FERNANDO TOSHIHIKO MITSUYASSU, AND CARLOS EDUARDO PINOTTI

Appeal 2007-1755
Application 10/930,047
Technology Center 3600

Decided: July 24, 2007

Before TERRY J. OWENS, LINDA E. HORNER, and ANTON W. FETTING, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants seek our review under 35 U.S.C. § 134 of the Examiner's final rejection of claims 1-23, all of the claims now pending in the present application. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM.

THE INVENTION

Appellants' claimed invention is a single wheel rim capable of simultaneously supporting two tires (Specification ¶ 0014). Claims 1 and 12, reproduced below, are representative of the subject matter on appeal.

> 1. A wheel comprising:
> a rim having a first groove for receiving a first tire and a second groove for receiving a second tire;
> said rim having a first outer portion including said first groove and a second outer portion including said second groove with an intermediate rim portion being positioned between said first outer portion and said second outer portion; and
> at least one ventilation bore extending through said intermediate rim portion, wherein said first outer portion, said second outer portion, and said intermediate portion are formed together as a single piece.
>
> 12. The wheel of Claim 9 wherein said first inner flange and said intermediate member extend circumferentially around said rim, said first inner flange having a first diameter and said intermediate member having a second diameter, said first diameter being greater than said second diameter.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Juhan	US 4,715,660	Dec. 29, 1987
Sorrentino	US 4,925,250	May 15, 1990
Yasushi	US 5,244,026	Sep. 14, 1993

The following rejections are before us for review.

1. Claims 1-4, 6-11, and 13-18 stand rejected under 35 U.S.C § 103(a) as unpatentable over Yasushi and Juhan.

2. Claims 5, 12, and 19-23 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Yasushi, Juhan, and Sorrentino.

ISSUE

Appellants contend that (1) "there is no motivation or suggestion to modify Yasushi in the manner proposed by the examiner" (Appeal Br. 4), (2) "Sorrentino is non-analogous art" (Appeal Br. 6), and (3) there is "no motivation or suggestion to modify Yasushi with Sorrentino in the manner proposed by the examiner" (Appeal Br. 8). The Examiner found that (1) Juhan teaches the "desirability of including openings in the central portion of the rim of the wheel, for the purpose of allowing drainage of water, snow, etc. that collects between the dual tires" and to "provide improved cooling of the brake components" (Answer 6), (2) Sorrentino "shows [the] structure for a wheel, which would function on any size wheel regardless of application" (Answer 8), and (3) "it is well known in the art that a larger open area located between the tires and a wheel rim would increase air circulation around the surface of the wheel rim" and increased air circulation

increases the cooling effect on brake elements (Answer 8). The issues before us are whether Appellants have shown that the Examiner erred in rejecting claims 1-4, 6-11, and 13-18 as unpatentable over Yasushi and Juhan, and claims 5, 12, and 19-23 as unpatentable over Yasushi, Juhan, and Sorrentino.

FINDINGS OF FACT

The relevant facts include the following:

1. Yasushi teaches a wheel 1 comprising a first rim 2a and a second rim 2b integrally formed in a parallel configuration on an outer periphery of a single wheel 1 (Yasushi, col. 2, ll. 35-37).

2. The wheel 1 includes a disc formed/mounted from/on an interior surface of the second rim 2b (Yasushi, Fig. 1).

3. The wheel structure of Yasushi comprises a space between the rim and the dual tires where snow, ice, or water could accumulate (Yasushi, Fig. 1).

4. The outermost portion of the wheel disc 1 is formed from/on an inwardly facing portion of the rim 2b which lies within the boundaries of the outermost limits of the rim 2b (Yasushi, Fig. 1).

5. Juhan teaches a wheel comprising a lateral disc 3 and at least two fitting rings 1a and 1b for pneumatic tires, mounted side by side on a single rim (Juhan, col. 1, ll. 8-10).

6. Each of the two fitting rings 1a and 1b are supported by a respective annular rim element 2a and 2b, concentrically disposed and formed with the wheel disc 3 (Juhan, col. 2, ll. 1-5).

7. The rim element 2b comprises a plurality of openings 7b (Juhan, col. 2, ll. 17-24).

8. The number and dimensions of the openings 7b are determined so as to permit easy evacuation of water which may accumulate between the pneumatic tires when the wheel runs on a wet or snow covered surface (Juhan, Fig. 1 and col. 2, ll. 25-34).

9. The openings 7b may also provide improved cooling of the vehicle brakes (Juhan, col. 2, ll. 46-48).

10. Sorrentino teaches a wheel structure designed for use with 1/10 scale radio controlled toy cars which reduces the tendency of the cars to roll over and also enhances the acceleration and cornering performance of the cars (Sorrentino, Abstract).

11. The wheel has a hollow elongated generally cylindrical body portion 12 terminating in mirror symmetrical opposite end portions, having an outer radially extending flange including an annular end face 15 and a cylindrical side wall 14, 16 (Sorrentino, col. 3, l. 68 – col. 4, l. 5).

12. A first stepped intermediate diameter portion 20, 34 is formed adjacent the outer flange and has a diameter greater than the cylindrical body portion 12 and less than the outer flange 14, 36 (Sorrentino, col. 4, ll. 8-11).

13. A second stepped intermediate diameter portion is formed between the intermediate 24, 30 and inner 26, 28 bead retaining flanges, and has diameter greater than the cylindrical body portion 12 and less than the intermediate 24, 30 and inner 26, 28 bead retaining flanges (Sorrentino, col. 4, ll. 20-25).

14. Appellant's claimed invention is directed to a wheel having a single wheel rim capable of simultaneously supporting at least two tires (Specification ¶ 14). Sorrentino is also directed to wheel structures configured to simultaneously support at least two tires. As such, Sorrentino is within the same field of endeavor as the claimed invention (i.e., wheels capable of supporting dual tires).

15. Interior is commonly defined as lying, occurring, or functioning within the limiting boundaries. *Merriam-Webster's Collegiate Dictionary* 652 (11th ed. 2005).

16. Appellant's Specification does not provide any special meaning to the term interior nor does it utilize the term contrary to its customary meaning.

PRINCIPLES OF LAW

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc*., 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and 4) secondary considerations, where in evidence. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). *See also KSR*, 127 S.Ct. at 1734, 82 USPQ2d at 1391 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define

the inquiry that controls.")

In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," *id.* at 1739, 82 USPQ2d at 1395, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Supreme Court emphasized that "the principles laid down in *Graham* reaffirmed the 'functional approach' of *Hotchkiss*, 11 How. 248." *KSR,* 127 S.Ct. at 1739, 82 USPQ2d at 1395 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 12 (1966) (emphasis added)), and reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* The Court explained:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 1740, 82 USPQ2d at 1396. The operative question in this "functional approach" is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.*

The Supreme Court stated that "[f]ollowing these principles may be more difficult in other cases than it is here because the claimed subject matter may

involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement." *Id.* The Court explained, "[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id.* at 1740-41, 82 USPQ2d at 1396. The Court noted that "[t]o facilitate review, this analysis should be made explicit." *Id.*, citing *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). However, "the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.*

The use of hindsight knowledge to support an obviousness rejection under 35 U.S.C. § 103 is impermissible. *See, e.g.*, *KSR*, 127 S.Ct. at 1742, 82 USPQ2d at 1397 ("A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.") (citing *Graham*, 383 U.S. at 36). However, obviousness judgments are necessarily based on hindsight, but so long as judgment takes into account only knowledge known in the art, there is no impermissible use of hindsight. *In re McLaughlin*,

443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971). *See also KSR*, 127 S.Ct. at 1742-43, 82 USPQ2d at 1397 ("Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it.").

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Deminski*, 796 F.2d 436, 442**,** 230 USPQ 313, 315 (Fed.Cir. 1986); *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171**,** 174 (CCPA 1979). Some question whether the analogous art test remains the same following the Supreme Court's ruling in *KSR*, in which the Court found that the Court of Appeals had erred in assuming that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem. *KSR*, 127 S.Ct. at 1742, 82 USPQ2d at 1397. We do not need to decide this issue in the present appeal, because even under the strict analogous arts test, as set forth in *Deminski* and *Wood*, the art relied on by the Examiner in the present appeal constitutes analogous art for purposes of an obviousness determination, as explained *infra*.

ANALYSIS

Rejection of claims 1-4, 6-11, and 13-18 under 35 U.S.C. § 103(a) as unpatentable over Yasushi and Juhan

Appellants argue claims 1-4, 6, 8-11, 13, and 15-18 as a group. As such, we select claim 1 as a representative claim, and the remaining claims of the group will stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2006). Claims 7 and 14 will be treated separately.

Appellants contend that "there is no motivation or suggestion to modify Yasushi in the manner proposed by the examiner" (Appeal Br. 4). The Examiner found that (1) "[t]he Yasushi wheel has a space located between the dual ties where snow, ice, and water could accumulate" and (2) Juhan teaches the "desirability of including openings in the central portion of the rim of the wheel, for the purpose of allowing drainage of water, snow, etc. that collects between the dual tires" (Answer 6). Therefore, the Examiner held it would have been obvious "to provide the Yasushi wheel with the openings taught by Juhan in order to allow drainage of the snow, ice, or water" (Answer 6). We sustain the Examiner.

Appellants argue that the bores 7b of Juhan are formed within the internal portion 12 of rim 6 to allow debris to be evacuated from the space or passage 5 and since the rim of Yasushi does not have an equivalent space or passage, there would be no motivation to modify the rim of Yasushi to include such openings (Appeal Br. 5). Furthermore, Appellants argue that the "raised center portion [of Yasushi] does not define a passage or a space that is in any way similar to that of Juhan" nor is there any disclosure or suggestion that the wheel of Yasushi has "a problem or

concern with accumulation of debris" (Reply Br. 2). Even though the wheel rim of Yasushi does not have an equivalent space or passage to that of Juhan in terms of size and dimension, the wheel structure of Yasushi does comprise a space between the rim and the dual tires where snow, ice, or water could accumulate (Finding of Fact 3). In addition, Juhan teaches an improvement to a wheel rim to solve this problem (Finding of Fact 8). Therefore, the wheel structure of Yasushi would benefit from the addition of the openings 7b. *See KSR*, 127 S.Ct. at 1740, 82 USPQ2d at 1396 ("[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.").

Furthermore, as noted by the Examiner, Juhan teaches that in addition to allowing evacuation of water from passage way 5, the openings 7b may provide improved cooling of the vehicle brakes (Finding of Fact 9). Therefore, even if, *arguendo*, the wheel structure of Yasushi did not suffer from the accumulation of snow or ice, the wheel would still benefit from the improved brake cooling provided by the addition of the openings 7b. As such, we sustain the Examiner's rejection of claims 1-4, 6, 8-11, 13, and 15-18 as being unpatentable over Yasushi and Juhan.

Appellants argue claim 7 separately. Claim 7, which depends from claim 1, requires that the wheel include a wheel disc mounted to an interior portion of the rim. Appellants contend the wheel disc in Yasushi is "formed as part of the outer portion 2b of the rim itself, forming a full face wheel," not mounted to an interior

portion of the rim as required by claim 7 (Appeal Br. 5). The Examiner found that Fig. 1 of Yasushi shows the "disc portion of the wheel (the vertically extending portion that includes elements 40 & 41) is mounted to an inter[ior] portion of a rim 2b" (Answer 6). Furthermore, the Examiner found that "[g]iven the fact that the radially outermost portion of the disc is located on a section of the rim 2b that faces radially inwardly, Yasushi meets the limitation of the 'wheel disc being mounted to an interior portion of the rim'" (Answer 6). We sustain the Examiner.

Interior is commonly defined as lying, occurring, or functioning within the limiting boundaries (Finding of Fact 15). The Specification does not provide any special meaning to the term interior, nor does it utilize the term contrary to its customary meaning (Finding of Fact 16). As illustrated in Fig. 1 of Yasushi, the outermost portion of the wheel disc is formed from/on an inwardly facing portion of the rim 2b which lies within the boundaries of the outermost limits of the rim 2b (Finding of Fact 4). Accordingly, the disc lies, occurs, or functions within the limiting boundary of the rim 2b. As such, we sustain the Examiner's rejection of claim 7 as unpatentable over Yasushi and Juhan.

Appellants argue claim 14 separately. Claim 14, which depends from claim 9, requires that the wheel include a wheel disc mounted to an inner surface of the rim. Appellants contend the wheel disc in Yasushi is "formed as part of the outer portion 2b of the rim itself, forming a full face wheel," not mounted to an inner surface of the rim as required by claim 14 (Appeal Br. 6). Although claim 14 recites the phrase "inner surface" instead of "interior portion", as recited in claim 7, we find no distinction in the Specification between the terms. As such, we

sustain the Examiner's rejection of claim 14 as unpatentable over Yasushi and Juhan for the reasons presented, *supra,* with respect to claim 7.

Rejection of claims 5, 12, and 19-23 under 35 U.S.C. § 103(a) as unpatentable over Yasushi, Juhan, and Sorrentino

Appellants argue claims 12, 19, 20, 22 and 23 as a group. As such, we select claim 12 as a representative claim, and the remaining claims of this group stand or fall with claim 12. 37 C.F.R. § 41.37(c)(1)(vii) (2006). Claims 5 and 21 will be treated separately.

Appellants contend that claim 12 is patentable over the combination of Yasushi, Juhan, and Sorrentino because (1) "Sorrentino is non-analogous art," and (2) there is "no motivation or suggestion to modify Yasushi with the teachings of Sorrentino in the manner proposed by the examiner" (Appeal Br. 8). The Examiner found that (1) Sorrentino teaches a "structure for a wheel, which would function on any size wheel regardless of application" and (2) "it is well known in the art that a larger open area located between the tires and a wheel rim would increase air circulation around the surface of the wheel rim" and "[i]ncreased air circulation would increase the cooling effect on brake elements" (Answer 8). We sustain the Examiner.

Appellants contend that Sorrentino and the claimed invention are not in the same field of endeavor because "[t]he inventor's field of endeavor is vehicle wheels for the automotive industry" and Sorrentino's field of endeavor "concerns radio-controlled toy cars" (Appeal Br. 7). We disagree.

Appellants claimed invention is directed to a wheel structure. There is no claimed requirement that the wheel is utilized in the automotive industry, nor that the wheel be of particular size. Sorrentino teaches a wheel structure which reduces the tendency of scaled cars to roll over and also enhances the acceleration and cornering performance of the car (Finding of Fact 8). Both the claimed invention and Sorrentino are concerned with the field of wheel structures for vehicles. As such, Sorrentino is analogous art.

The Examiner found that Sorrentino teaches a wheel structure which would function on any size wheel regardless of application (Answer 8). Appellants argue that "[d]esigners of wheels for toy cars are more concerned with the visual aspect of the wheel, i.e., how aesthetically pleasing the wheel is, than with the structural soundness of the wheel" and that "[t]here is nothing in Sorrentino, or the prior art, to indicate that the toy wheels can simply be scaled up and installed on a full-size vehicle" (Reply Br. 4). We disagree.

Sorrentino specifically teaches a wheel structure designed for use with 1/10 scale radio controlled toy cars which reduces the tendency of the cars to roll over and also enhances the acceleration and cornering performance of the car (Finding of Fact 8), not the visual aspect of the wheel as suggested by Appellants. Furthermore, one skilled in the art would readily appreciate the distinction between toy cars which are designed to *look like* full-scale vehicles and *scaled* racing models as taught by Sorrentino.

Appellants further contend that "there is no motivation or suggestion to modify Yasushi with the teachings of Sorrentino" (Appeal Br. 7). The Examiner

found that it is well known "that a larger open area located between the tires and a wheel rim would increase air circulation around the surface of the wheel rim" and that this "[i]ncreased air circulation would increase the cooling effect on brake elements" (Answer 8). In response, Appellants argue that (1) "there is no disclosure or suggestion anywhere in Sorrentino to support the examiner's position" that increased brake cooling would result from decreasing the diameter of the intermediate rim portion of Yasushi, and (2) "[t]here is no disclosure in Yasushi or Sorrentino that would suggest that such a structural modification would be beneficial for Yasushi" (Reply Br. 5). However, Appellants have not provided any evidence that the Examiner's position is incorrect. Instead, Appellants appear to be asserting that the Examiner's finding regarding what is well known in the art is incorrect because Yasushi and Sorrentino are silent with regard to the allegedly well known facts. The mere fact that Yasushi and Sorrentino are silent with regard to the Examiner's findings regarding increase air circulation is not equivalent to providing evidence that the Examiner's findings are scientifically unsound. Furthermore, Juhan implicitly supports the Examiner's findings by stating that the openings 7b may provide increased cooling to the brakes presumably by increasing the air circulation (Finding of Fact 7). As such, we sustain the Examiner's rejection of claims 12, 19, 20, 22 and 23 as unpatentable over Yasushi, Juhan, and Sorrentino.

Appellants argue claim 5 separately. Claim 5, which depends from claim 4, requires that one of the first outer flange and the first inner flange has a first

diameter and said intermediate rim portion has a second diameter, the first diameter being larger than the second diameter.

Appellants contend claim 5 is patentable over the combination of Yasushi, Juhan, and Sorrentino because (1) "Sorrentino is non-analogous art" (Appeal Br. 6), and (2) there is "no suggestion or motivation to modify Yasushi with the teachings of Sorrentino" (Appeal Br. 7). We sustain the Examiner's rejection of claim 5 as unpatentable over Yasushi, Juhan, and Sorrentino for the reasons presented, *supra,* with respect to claim 12.

Appellants argue claim 21 separately. Claim 21, which depends from claim 19, requires that one of said first outer flange and said second outer flange has a diameter larger than said second diameter.

Appellants contend claim 21 is patentable over the combination of Yasushi, Juhan, and Sorrentino because (1) "Sorrentino is non-analogous art", (2) "there is no motivation or suggestion to modify Yasushi with Sorrentino in the manner proposed by the examiner", and (3) "[i]n Yasushi, the outer flanges, the inner flanges, and the intermediate portion all have an outermost circumference that is defined by a common diameter" (Appeal Br. 9). With regard to Appellants' arguments (1) and (2), we sustain the Examiner for the same reasons presented, *supra,* with respect to claim 12.

With regard to Appellants third (3) argument, the Examiner found that Sorrentino "teaches the use of a wheel having first and second inner flanges (26 & 28, respectively) that have a first diameter that is greater than the diameter of an intermediate portion that extends between the first and second inner flanges

(26 & 28, respectively)" (Answer 4). Furthermore, the Examiner held that it would have been obvious to one skilled in the art "to form the intermediate portion of Yasushi as modified by Juhan with a diameter smaller than the diameter of the inner flanges, as a matter of design choice, providing more free space between the tires for air to flow to cool the brake elements of the vehicle" (Answer 5). Appellants have not provided any evidence to rebut the Examiner's finding that increased air circulation between the tires provides cooling to the brake elements. As such, we sustain the Examiner's rejection of claim 21 as unpatentable over Yasushi, Juhan, and Sorrentino.

CONCLUSIONS OF LAW

We conclude that Appellants have not shown that the Examiner erred in rejecting claims 1-4, 6-11, and 13-18 under 35 U.S.C. § 103(a) as unpatentable over Yasushi and Juhan, and claims 5, 12, and 19-23 under 35 U.S.C. § 103(a) as unpatentable over Yasushi, Juhan, and Sorrentino.

DECISION

The Examiner's decision under 35 U.S.C. § 103(a) to reject claims 1-4, 6-11, and 13-18 as unpatentable over Yasushi and Juhan and claims 5, 12, and 19-23 as unpatentable over Yasushi, Juhan, and Sorrentino 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). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

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