

**United States Court of Appeals  
for the Federal Circuit**

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**PRIDE MOBILITY PRODUCTS CORPORATION,**  
*Appellant*

v.

**PERMOBIL, INC.,**  
*Appellee*

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2015-1585, 2015-1586

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Appeals from the United States Patent and Trade-  
mark Office, Patent Trial and Appeal Board in Nos.  
IPR2013-00407, IPR2013-00411.

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Decided: April 5, 2016

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GARY H. LEVIN, Baker & Hostetler LLP, Philadelphia,  
PA, argued for appellant. Also represented by HAROLD H.  
FULLMER, DANIEL J. GOETTLE.

AMY K. WIGMORE, Wilmer Cutler Pickering Hale and  
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represented by OWEN K. ALLEN, HEATH BROOKS, DAVID  
LANGDON CAVANAUGH, RICHARD ANTHONY CRUDO.

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Before REYNA, TARANTO, and CHEN, *Circuit Judges*.

TARANTO, *Circuit Judge*.

Pride Mobility Products Corp. owns U.S. Patent Nos. 8,408,598 and 8,408,343, which disclose and claim wheelchairs designed to travel stably over obstacles. The Patent and Trademark Office’s Patent Trial and Appeal Board, acting through a panel under authority delegated by the Director, instituted inter partes reviews of the ’598 and ’343 patents on petitions filed by Permobil, Inc. under 35 U.S.C. § 311 *et seq.* After reviewing the patents, the Board cancelled all claims of both patents for obviousness. *Permobil, Inc. v. Pride Mobility Prods. Corp.*, IPR2013-407, 2014 WL 7405755 (PTAB Dec. 31, 2014) (*’598 Decision*); *Permobil, Inc. v. Pride Mobility Prods. Corp.*, IPR2013-411, 2014 WL 7405756 (PTAB Dec. 31, 2014) (*’343 Decision*). Pride Mobility’s appeal centers on two issues: (1) whether the Board misconstrued claim 7 of the ’343 patent, which requires a “substantially planar” mounting plate “oriented perpendicular” to the axis of the claimed wheelchair’s drive wheel; and (2), as to all other claims, whether the Board erred in concluding that a relevant skilled artisan would have been motivated to make the claimed wheelchair by lowering the position of a pivot in a prior-art wheelchair. We reverse the Board’s construction and cancellation of claim 7 of the ’343 patent. As to the other claims, we affirm.

#### BACKGROUND

Pride Mobility and Permobil compete for sales of power wheelchairs. The ’598 and ’343 patents disclose wheelchairs that raise their front wheels (called caster wheels) in response to torque from the chairs’ motors, enhancing the capacity of the chairs to travel stably over obstacles. ’598 patent, col. 2, line 55, through col. 3, line 3; ’343 patent, col. 2, lines 16–31. Figure 2 of the ’598 patent and Figure 3B of the ’343 patent are illustrative:

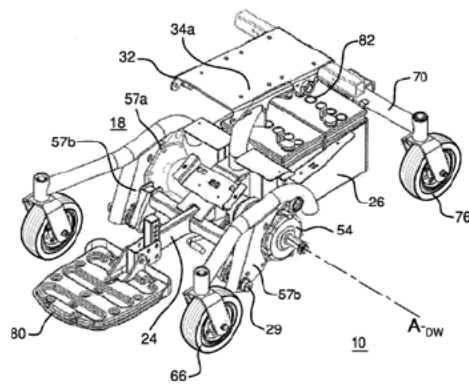
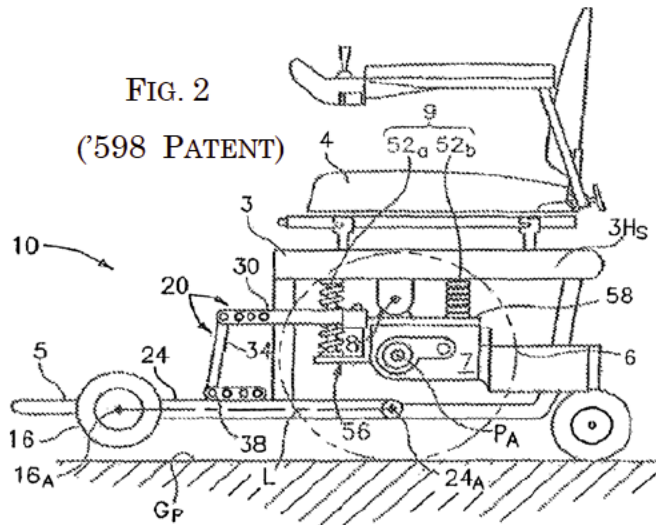


FIG. 3B  
(343 PATENT)

As shown in Figure 2, the '598 patent discloses a chair with a frame 3, a drive wheel 6 centered around drive-wheel axis  $P_A$ , a front caster wheel 16 centered around caster-wheel axis  $16_A$ , and an arm 24 connecting the front caster wheel to the frame, the arm itself connected to the frame by pivot axis  $24_A$ . '598 patent, col. 4, lines 35–62. Importantly, the pivot axis is *below* a straight line drawn between the drive-wheel axis  $P_A$  and front-caster-wheel axis  $16_A$ . When the wheelchair accelerates or climbs a curb or other obstacle, the arm 24 rotates clockwise about the pivot axis, lifting the front caster wheel. *Id.*, col. 5, lines 41–55.

The '343 patent discloses a chair that is similar in relevant respects. See '343 patent, Figs. 1, 3A, 3B, & 5; *id.*, col. 7, line 51, through col. 8, line 8. Figure 3B shows portions of the '343 patent's chair relevant to the issue presented by claim 7 of that patent. A part of each of a left and right drive assembly (not numbered in Figure 3B) is a mounting plate (number 56 in other Figures), a portion of which is shown in Figure 3B as 57b. See *id.*, col. 7, lines 60–63; *id.*, col. 8, lines 27–32. That part of the mounting plate contains a pivot 29. The plate connects at its top to the roughly horizontal (slightly bent) front arm (numbered 60 in other Figures), which in turn connects to a caster wheel 66. *Id.*, col. 8, lines 27–35, 60–62; *id.*, col. 11, lines 21–28. As in the '598 patent's chair, the relevant pivot of the '343 patent's chair is positioned *below* a line drawn between the chair's drive-wheel axis A<sub>DW</sub> and the front-caster-wheel axis (not numbered).

Claim 1 of the '343 patent, representative of most of the claims at issue, reads:

1. A wheelchair comprising:
  - a frame;
  - a drive wheel defining a drive wheel axis a mounting plate pivotally coupled to the frame at a pivot axis, the pivot axis being positioned forward of the drive wheel axis; a mounting plate pivotally coupled to the frame at a pivot axis, the pivot axis being positioned forward of the drive wheel axis;
  - a drive operatively coupled to the drive wheel and affixed to the mounting plate;
  - a forward-extending front arm rigidly extending from the mounting plate such that the mounting plate, drive, and front arm are together configured to pivot about the pivot axis;

a front wheel rotatably coupled to the front arm, the front wheel defining a front wheel axis, *wherein a vertical position of the pivot axis with respect to the ground plane is spaced from and positioned relatively below a line drawn between the drive wheel axis and the front wheel axis when the drive wheels and front wheels are on level ground;*

whereby motor torque biases the front wheel.

*Id.*, col. 14, line 58, through col. 15, line 12 (emphasis added). Claim 7 of the '343 patent, which depends on claim 1, adds:

wherein the mounting plate is substantially planar and is oriented perpendicular to the drive wheel axis.

*Id.*, col. 16, lines 10–12.

Permobil filed petitions for inter partes review of the '598 and '343 patents under 35 U.S.C. § 311(a). Permobil argued that the wheelchairs of all claims of the '598 patent would have been obvious over WO 02/34190 to Goertzen in view of, among other references, U.S. Patent No. 6,454,286 to Hosino and U.S. Patent No. 6,129,165 to Schaffner. Permobil also argued that the wheelchairs of all claims of the '343 patent would have been obvious over Goertzen in view of, among other references, Hosino and U.S. Patent Application No. 03/0205420 to Mulhern. In its preliminary responses under 35 U.S.C. § 313, Pride Mobility argued that Permobil had failed to show a motivation to make the asserted combinations of references.

The primary reference, Goertzen, discloses a wheelchair for traversing obstacles such as curbs. The Goertzen chair has a pivot arm connected to the chair's frame by a pivot-mounting structure, such that the pivot connecting to the frame is positioned *above* a straight line drawn between the drive-wheel and front-caster-wheel

axes. Hosino, Mulhern, and Schaffner also disclose wheelchairs equipped for riding over uneven terrain. Significantly, both Hosino and Mulhern disclose chairs with pivots or pivot-like elements located *below* a line drawn between their drive-wheel and front-caster-wheel axes. Schaffner discloses a chair with a drive-wheel axis and housing, the housing enclosing a motor and transmission.

The Board, exercising the PTO Director's authority by regulatory delegation, 37 C.F.R. § 42.4(a), instituted reviews of all claims of both patents under 35 U.S.C. § 314(a). As to the '598 patent, the Board concluded that Permobil had established a reasonable likelihood that the wheelchairs of claims 1, 4–8, and 11–13 would have been obvious over Goertzen and Hosino—combining the two by using Hosino's low pivot point to motivate the lowering of the pivot point in Goertzen. Using the same core reasoning as to the pivot-point location, the Board also concluded that Permobil had established a reasonable likelihood that the wheelchairs of claims 2, 3, 9, and 10 would have been obvious over Goertzen, Hosino, and Schaffner. As to the '343 patent, the Board concluded, again for similar reasons, that Permobil had established a reasonable likelihood that the wheelchairs of all of that patent's claims would have been obvious over Goertzen and Hosino and, separately, that the wheelchairs of claims 1 and 4–10 would have been obvious over Goertzen and Mulhern.

After the reviews were instituted, the Board began conducting the reviews under 35 U.S.C. §§ 6(b)(4) & 316(c). Pride Mobility filed responses as authorized by 37 C.F.R. § 42.120. In reliance on a declaration from its expert, Dr. Curran, Pride Mobility argued that a skilled artisan would have recognized that lowering the pivot in the Goertzen chair would reduce that chair's stability. Dr. Curran discussed various options that a skilled artisan might consider to reduce the instability caused by lowering Goertzen's pivot, but he concluded that each of

those options would compromise the chair's performance. Permobil, in a reply implicitly authorized by 37 C.F.R. §§ 42.23, 42.24(c)(1), maintained that there were ways to adjust the characteristics of the chair to maintain its stability, citing, among other things, deposition testimony of Permobil's expert, Dr. Richter.

The Board cancelled all claims of both patents in its final written decisions under 35 U.S.C. § 318(a). As to the '598 patent, the Board first determined that the wheelchairs of claims 1, 4–8, and 11–13 would have been obvious over Goertzen and Hosino. *'598 Decision*, at \*12. In particular, the Board found that Permobil's expert, Dr. Richter, had testified about how lowering the pivot point in the Goertzen chair would introduce a stability problem but that a skilled artisan "would have known to compensate for the reduction in stability" in various ways. *Id.* at \*10 (citing J.A. 990–92). It also found that the advantage of using a low pivot axis taught in Hosino applied equally to the chair disclosed in Goertzen, despite physical differences between the two chairs and different principal uses. *Id.* at \*11. On those bases, the Board found that a skilled artisan would have looked to Hosino and modified Goertzen accordingly. *Id.* The Board also concluded that the wheelchairs of claims 2, 3, 9, and 10 of the '598 patent would have been obvious over Goertzen, Hosino, and Schaffner. *Id.* at \*12–15.

As to the '343 patent, the Board first construed language in claim 7—which requires a mounting plate that "is substantially planar and is oriented perpendicular to the drive wheel axis," '343 patent, col. 16, lines 10–12—as covering an arrangement in which the drive-wheel axis is, in common-sense and ordinary geometric terms, parallel to the planar surface of a substantially planar mounting plate. The Board so concluded by relying on the patent's description of Schaffner as showing a drive-wheel axis that is perpendicular to a motor—a motor whose longitudinal axis (not any planar surface) was perpendicular to

the drive-wheel axis. The Board concluded that the claim language, though referring to a substantially planar mounting plate, is “broad enough to encompass not only the orientation of mounting plate 56 relative to drive wheel axis A-DW, but also the orientation of motor 80 relative to the drive wheel axis 24, as depicted in Figure 9 of [Schaffner].” ’343 *Decision*, at \*6. On that basis the Board found that claim 7 reads on the substantially planar mounting plate 308 and drive-wheel axis 311 of Figure 3 of Goertzen:

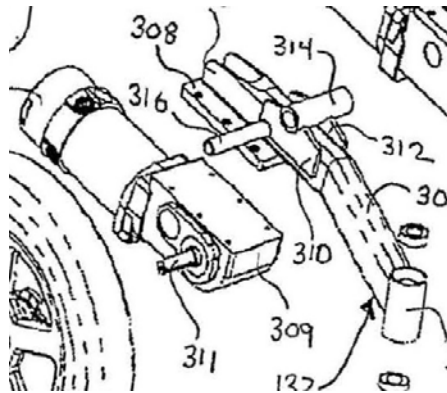


FIG. 3  
(GOERTZEN)

The Board so found because, although the planar surface of Goertzen’s mounting plate 308 plainly was not perpendicular to the drive-wheel axis 311, one edge of the roughly rectangular flat plate (perhaps the longer edge), like the longitudinal axis of Schaffner’s motor, was perpendicular to the drive-wheel axis. *Id.* at \*13.

The Board ultimately concluded that the wheelchairs of claims 1–10 of the ’343 patent would have been obvious over Goertzen and Hosino, relying specifically on the just-described claim construction for claim 7 and otherwise relying on the same reasons that it determined that the relevant claims of the ’598 patent failed for obviousness over the same references. *Id.* at \*7–13. It also concluded that the wheelchairs of claims 1 and 4–10 of the ’343



patent would have been obvious over Goertzen and Mulhern. *Id.* at \*13–15.

Pride Mobility appeals under 35 U.S.C. § 319, challenging the Board’s construction of claim 7 of the ’343 patent and the cancellation of the ’598 and ’343 patents’ claims. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

#### DISCUSSION

“This court reviews Board decisions using the standard set forth in the Administrative Procedure Act, 5 U.S.C. § 706.” *In re Sullivan*, 362 F.3d 1324, 1326 (Fed. Cir. 2004) (citing *Dickinson v. Zurko*, 527 U.S. 150, 154 (1999)); see *Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1323 (Fed. Cir. 2015) (inter partes review); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015) (inter partes review subject to various APA requirements). Under 5 U.S.C. § 706(2)(A), (E), the Board’s actions here are to be set aside if “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law” or “unsupported by substantial evidence.” See *Sullivan*, 362 F.3d at 1326 (citing *In re McDaniel*, 293 F.3d 1379, 1382 (Fed. Cir. 2002)); Brief for Intervenor—Director of the U.S. Pat. & Trademark Office at 23–24, *Magnum Oil Tools Int’l, Ltd.*, No. 2015-1300 (Fed. Cir. Sept. 18, 2015), 2015 WL 5920112, at \*23–24 (inter partes review).

Two types of issues are presented here. Regarding claim construction, “[t]here being no dispute here about findings or evidence of facts extrinsic to the patent, whether facts about outside-the-patent understandings of technical words or other facts, we conduct a de novo review of the Board’s determination of the broadest reasonable interpretation of the claim language.” *Straight Path IP Group, Inc. v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1360 (Fed. Cir. 2015). Such de novo review accords with the de novo review of ordinary judicial claim

construction where, as here, no facts are in dispute. See *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015); *Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, 796 F.3d 1312, 1323 (Fed. Cir. 2015). Regarding obviousness, we review de novo the ultimate determination of obviousness and compliance with legal standards, and we review underlying factual findings for substantial evidence. *Belden*, 805 F.3d at 1073.

#### A

We first review the Board’s construction and cancellation of claim 7 of the ’343 patent. Claim 7 requires a “mounting plate [that] is substantially planar and is oriented perpendicular to the drive wheel axis.” ’343 patent, col. 16, lines 10–12. It is unreasonable to read that straightforward language as meaning anything other than that the drive-wheel axis is perpendicular to the surface of the mounting plate that makes the plate substantially planar. In terms of simple geometry, if the plate were translated in space (without rotation) so that it intersected the axis, the axis would intersect the substantially planar surface at a single point (not more) and make a right angle.

The claim language says two things about the plate: it must be substantially planar, and it must be oriented perpendicular to the drive-wheel axis. The “oriented” term allows the plate and axis not to be touching: it requires that their placement in space must be such that, if translated in space without rotation, they would be perpendicular. With the axis idealized as a line, perpendicularity in the ordinary geometric sense relevant here requires that the axis make a right angle with either an essentially one-dimensional feature (a line or curve) or an essentially two-dimensional feature (a plane or surface) of the plate: lines are not “perpendicular” to a three-dimensional object in any other ordinary geometric sense. And the claim tells us exactly what that feature of the

three-dimensional plate is: it is the surface that makes the plate substantially planar. The claim identifies no other feature of the plate. The phrase “oriented perpendicular to the drive wheel axis” must be read to mean that the drive-wheel axis is perpendicular to the mounting plate’s substantially planar surface. We do not see how the claim language can mean anything else without obvious strain.

The specification reinforces this reading. In a first embodiment, the specification says that “[m]ounting plate 56 preferably is planar and oriented perpendicular to the rotational axis C-DW of drive wheels 58.” *Id.*, col. 8, lines 27–29. In the same passage, it points to Figures 3A, 3B, 4A, and 4B as “best show[ing]” the components of mounting plate 56, including its projection 57b. *Id.*, col. 8, lines 29–32. Each of those figures shows projection 57b as having a planar surface oriented perpendicularly to the drive-wheel axis (A-DW) in the ordinary geometric sense. The specification likewise says that mounting plate 56 (of which 57b is a part) in a second embodiment “preferably is planar and oriented perpendicular to rotational axis C-DW of drive wheels 58’,” pointing to Figures 7A and 7B. *Id.*, col. 13, lines 19–23. Both of those figures show the axis of the drive wheel oriented perpendicularly to the planar surface of the mounting plate. The specification nowhere describes or depicts the drive-wheel axis as oriented other than perpendicular to the planar surface of the mounting plate in the ordinary geometric sense.

The Board’s sole basis for its claim construction does not reasonably support a departure from what the claim language and specification so clearly mean. The ’343 patent’s specification describes Schaffner’s motor as having an orientation “perpendicular to [Schaffner’s] drive wheel axis.” *Id.*, col. 9, lines 20–25. That description plainly refers to perpendicularity of the drive-wheel axis to a one-dimensional feature of Schaffner’s motor, namely, its longitudinal axis (which runs front to back in

the wheelchair): the description refers to Schaffner as having a “longitudinally mounted motor[.]” and “requiring a right-angle gearbox” to translate the direction of the motor’s motion to the drive-wheel axis. *Id.*, col. 9, lines 21–26. Nothing in the reference to Schaffner refers to any two-dimensional feature (plane or surface) of the motor as perpendicular to the drive-wheel axis. In contrast, what claim 7 by its terms refers to is precisely a two-dimensional feature—the surface that makes the plate substantially planar—and not any longitudinal axis or other one-dimensional feature of the plate. Thus, the reference to perpendicularity of the Schaffner motor has a straightforward, ordinary-geometry meaning that has no significant bearing on the distinct but equally straightforward, ordinary-geometry meaning of perpendicularity in claim 7. Claim 7 requires that the mounting plate’s substantially planar surface be oriented perpendicularly to the drive-wheel axis.

Under that construction, the Board’s cancellation of claim 7 must be reversed. The sole prior-art reference that the Board (and Permobil) identified for this element is Goertzen. The pertinent component of Goertzen is substantially planar, but it is indisputably not perpendicular to the drive-wheel axis in the ordinary sense required by claim 7, and the Board did not find otherwise. The Goertzen plate, if translated without rotation to intersect the drive-wheel axis, would not intersect at a single point and make a right angle: indeed, the axis would likely lie flat on the plate. Accordingly, there is no evidence of the claim 7 element in the relied-on prior art. Because there is no other Board ruling or properly preserved argument addressed to this element, we reverse the cancellation of claim 7.

## B

As to all of the other claims at issue, we affirm the Board’s decision. The Board found that a relevant skilled

artisan would have been motivated to lower the pivot axis in the Goertzen chair in the way shown in Hosino. Pride Mobility challenges that finding, but it does not dispute that the finding, if sustained, suffices to support all of the rejections except for claim 7 of the '343 patent. We sustain the Board's finding.

The Board had sufficient evidence to find that lowering the pivot axis “enables a front caster wheel to move ‘rear upward’ and thereby more easily rise up and overcome [an] obstacle” such as a curb. *'598 Decision* at \*11; *see also id.* at \*9; *'343 Decision* at \*11, \*12; J.A. 338–39, ¶ 38; J.A. 966, 985. Based on its expert's evidence, however, Pride Mobility argues that a relevant skilled artisan would have recognized that obtaining the obstacle-climbing advantage would have come at the cost of introducing instability problems in the Goertzen chair and that adjustments of other components of the chair to compensate for instability would have introduced their own problems. But we read the Board as having found, and as reasonably understanding Dr. Richter to have testified, that a relevant skilled artisan would have “known to compensate for” the instability problem in ways that preserved the acceptability of the wheelchair. *See '598 Decision* at \*10; *'343 Decision* at \*12; J.A. 985–92. We need not go beyond saying that the findings and evidence, so understood, are sufficient to support the Board's rejection of Pride Mobility's argument against a skilled artisan's having had a reason to make the Goertzen-Hosino combination.

#### CONCLUSION

We reverse the Board's construction and cancellation of claim 7 of the '343 patent. We affirm the Board's cancellation of all other claims at issue in the '598 and '343 patents.

No costs.

**REVERSED IN PART AND AFFIRMED IN PART**