UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WENDELL H. CHUN,
MICHAEL S. BECK and JON T. STINCHCOMB

Appeal 2008-0220
Application 10/639,279
Technology Center 3600

Decided: May 27, 2008

Before WILLLIAM F. PATE, III, TERRY J. OWENS, and
MICHAEL W. O'NEILL, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellants appeal from a rejection of claims 1-41, which are all of the pending claims.

THE INVENTION

The Appellants claim a vehicle having a rotatable shoulder joint, and claim a shoulder joint for use in a vehicle suspension system. Claim 1 is illustrative:

1. A vehicle, comprising:

a plurality of powered wheel assemblies;

a plurality of rotating shoulder joints, each including a drive, and each wheel assembly being mounted to a respective one of the shoulder joints and rotatable in a plane by the drive of the respective shoulder joint; and

a chassis to which the shoulder joints are mounted.

THE REFERENCES

Kozowyk	US 3,513,927	May 26, 1970
Ruf	US 3,566,825	Mar. 2, 1971
Scerbo	US 3,666,036	May 30, 1972
Burton	US 4,021,690	May 3, 1977
Wilcox	US 6,267,196	Jul. 31, 2001

THE REJECTIONS

The claims stand rejected as follows: claims 13-21 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter the Appellants regard as the invention; claims 1, 2, 4, 5, 7-9, 13-17, 22-27, 31, 32 and 34-38 under 35 U.S.C. § 102(b) over Wilcox; claims 18, 19, 21, 28 and 29 under 35 U.S.C. § 103 over Wilcox in view of Burton; claims 20 and 30 under 35 U.S.C. § 103 over Wilcox in view of Ruf; claims 1-6, 8, 9, 31-35, 37 and 38 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk; claims 10, 11, 39 and 40 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk and

Burton; and claims 12 and 41 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk and Ruf.

OPINION

We affirm the Examiner's rejections except the art rejections of claims 13-21 which we procedurally reverse due to the indefiniteness of those claims.

Rejection of under 35 U.S.C. § 112, second paragraph

The Examiner argues that claim 13 is indefinite because the meaning of "through above the plane", which does not appear in the Appellants' original disclosure and was added to claim 13 by amendment (filed Dec. 19, 2005) (Ans. 4).

The Appellants argue that "[a]s noted during the prosecution, the 'plane of the vehicle is the plane formed by the mean of the centers of rotation of the articulating arms.' (Response to Office Action Dated September 14, 2005, p. 13)" (Br. 8).

That phrase in the Appellants' response (filed Dec. 19, 2005) is mere unsupported argument by the Appellants' counsel, and arguments of counsel cannot take the place of evidence, s*ee In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). Therefore, we are not persuaded that "the plane of the vehicle" cannot be another plane such as the plane of the bottom of the vehicle.

The Appellants argue that "[i]n the embodiment claimed in claim 13, the wheel assembly is rotated not just into, but through that part of the plane

of rotation above the plane of the vehicle, or 'through above the plane of the vehicle'" (Br. 8).

It is not clear from the Appellants' argument how, considering that the region above the plane of the vehicle is unlimited, the wheel assembly can be rotated through that region.

The Appellants argue that "[t]he Office has not addressed the ability of those in the art to parse the limitation in a manner consistent with their understanding of the technology to derive meaning from the limitation as a whole" (Reply Br. 2).

The relevant inquiry under 35 U.S.C. § 112, second paragraph, is whether the claim language, as it would have been interpreted by one of ordinary skill in the art in light of the Appellants' Specification, sets out and circumscribes a particular area with a reasonable degree of precision and particularity. *See In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971). Hence, to establish a prima facie case of indefiniteness it is not necessary for the Examiner to address the ability of those in the art to parse the limitation in a manner consistent with their understanding of the technology and to derive meaning of the limitation from that understanding. The limitation at issue does not appear in the Appellants' original disclosure, and the Examiner has pointed out the apparent inconsistency between "through" and "above" in the phrase "through above the plane" (Ans. 9). The Examiner, therefore, has established that, prima facie, "thorough above the plane", when interpreted in view of the Appellants' original Specification in which that phrase does not appear, fails to set out and circumscribe a particular area with a

reasonable degree of precision and particularity. The Appellants have not overcome that prima facie case.

Accordingly, we are not persuaded of reversible error in the rejection of claims 13-21 under 35 U.S.C. § 112, second paragraph.

Rejection under 35 U.S.C. § 102(b) over Wilcox

Claims 1, 2, 4, 5, 7-9, 22-27, 31, 32 and 34-38

Wilcox discloses "a vehicle where the drive motors may also be used to articulate the vehicle's suspension" (col. 1, ll. 63-65). The vehicle includes a body (12) having fixed thereto a transverse shaft (28) extending coaxially with the body 12 transverse axis (200) (col. 3, ll. 12-18). At each end of transverse shaft 28 is a drive mechanism (32A, 32B) (col. 3, ll. 18-21). Each drive mechanism 32A, 32B has 1) a first arm (40), one end of which is rotatably carried by shaft 28 and the other end of which is rotatably coupled to a first wheel (34), and 2) a second arm (60), one end of which is rotatably carried by shaft 28 and the other end of which is rotatably coupled to a second wheel (36) (col. 3, ll. 30-58). First wheel 34 and second wheel 36 are rotated by, respectively, a first (46) and a second (66) drive motor (col. 3, ll. 37, 50-51). Shaft 28 carries a central pulley (38) that is coupled 1) by a belt (50) to a first pulley (48) rigidly coupled to first wheel 34, and 2) by a belt (70) to a second pulley (68) rigidly coupled to second wheel 36 (col. 3, ll. 38-41, 52-56). When motor 46 rotates first wheel 34 relative to arm 40 it also rotates pulley 38 relative to arm 40, and when motor 66 rotates second wheel 36 relative to arm 60 it also rotates pulley 38 relative to arm 60 (col. 3, ll. 41-43, 56-58). Angles α and β (fig. 9) between

arms 40 and 60 and a horizontal plane 210 through central pulley 38 can be controlled by powering one of motors 46 and 66 while the other is unpowered (col. 5, ll. 12-16). "By reducing the angle α, the front of the vehicle, at the wheel **34**, may be lowered relative to the ground or the wheel **34** raised, such as to ascend an obstacle" (col. 5, ll. 32-34). "If it is desired to raise or lower the entire vehicle relative to the ground, the first and second wheels on each side may be raised or lowered sequentially. Alternatively, they may be raised or lowered together" (col. 5, ll. 60-62). That is done by rotating motors 46 and 66 in opposite directions (col. 5, l. 63 – col. 6, l. 9). Wilcox discloses:

> If the vehicle were to become inverted, it may nevertheless continue to navigate by articulating the arms **40**, **60** in the extension mode so that the angles α and β go through zero and become negative. In such a way, the vehicle may navigate in an inverted orientation [col. 6, ll. 28-32].
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> * * *
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> [I]f the body length is sufficiently small, a first pair of wheels at a first end of the body may be raised so as to lower the end of the body into contact with the ground (FIG. **9**), the longitudinally opposite pair of wheels may then be lowered while being driven toward the first end of the body. This will cause the body to flip about the first end whereupon the first pair of wheels are brought back into engagement with the ground (FIG. **10**) [col. 6, ll. 58-65].

The Appellants argue, with respect to claims 1, 2, 4, 5 and 7-9:

> Although Wilcox *et al*. does teach a plurality of wheel assemblies and a plurality of shoulder joints, each shoulder joint drives two wheel assemblies (*see* Figure 1; Abstract, lines 2-6). Thus, the wheel assemblies are not "mounted to a respective one" of the shoulder

> joints since each wheel assembly must share its shoulder joint with another wheel assembly [Br. 8-9].
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> * * *
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> It is not the number of wheels that defines the wheel assembly, but rather the wheel(s) as mounted to a suspension arm [Reply Br. 3].

During patent prosecution, claims are to be given their broadest reasonable interpretation consistent with the Specification, as the claim language would have been read by one of ordinary skill in the art in view of the Specification. *See In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989); *In re Sneed*, 710 F.2d 1544, 1548 (Fed. Cir. 1983). The Appellants exemplify a shoulder joint driving a single wheel and having one suspension arm per shoulder joint (figs. 3A, 3B), but the Appellants' Specification does not define "wheel assembly" as being limited to an assembly having only one wheel or one suspension arm per shoulder joint. The Appellants' Specification states that "the description herein of specific embodiments is not intended to limit the invention to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims" (Spec. 4:15-18). Thus, "wheel assembly", when given its broadest reasonable interpretation in view of the Appellants' Specification by one of ordinary skill in the art, would not have been limited to the Appellants' specific embodiment but, rather, would have encompassed Wilcox's wheel assembly having two wheels and two suspension arms per shoulder joint.

With respect to claims 22-27, 31, 32 and 34-38 the Appellants argue that Wilcox does not disclose a shoulder joint having a second portion mountable to a wheel assembly and rotatable above the plane of the vehicle with respect to the first portion (Br. 9). The Appellants argue that Wilcox's figure 9 exaggerates the position of the wheel assembly for purposes of illustration because all that is needed is to lift the wheel on the left in that figure off the ground, not to raise it above the plane of the vehicle (Br. 9-10; Reply Br. 4).

Wilcox's figure 9 shows the left wheel rotated completely above the vehicle. Hence, even if, as argued by the Appellants, the plane of the vehicle is through the centers of rotation of the articulating arms (Br. 8), in Wilcox's figure 9 a portion of the shoulder joint is rotated above that plane. For support of the argument that the rotation in Wilcox's figure 9 is exaggerated the Appellants rely upon the above-cited text regarding that figure (Br. 9-10). That text discloses that "a first pair of wheels at a first end of the body may be raised so as to lower the end of the body into contact with the ground (FIG. **9**)" (col. 6, ll. 59-61). The raising is that shown in figure 9, not the minimal raising argued by the Appellants.

For the above reasons we are not persuaded of reversible error in the rejection under 35 U.S.C. § 102(b) as to claims 1, 2, 4, 5, 7-9, 22-27, 31, 32 and 34-38.

Claims 13-17

Regarding claims 13-17 the Appellants argue that Wilcox does not disclose "rotating the housing through above the plane of the vehicle" (Br. 9; Reply Br. 4).

In some instances, it is possible to make a reasonable, conditional interpretation of claims adequate for the purpose of resolving patentability issues to avoid piecemeal appellate review. In the interest of administrative and judicial economy, this course is appropriate wherever reasonably possible. *See Ex parte Saceman*, 27 USPQ2d 1472, 1474 (Bd. Pat. App. & Int. 1993); *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984). In other instances, however, it may be impossible to determine whether or not claimed subject matter is anticipated by or would have been obvious over references because the claims are so indefinite that considerable speculation and assumptions would be required regarding the meaning of terms employed in the claims with respect to the scope of the claims. *See In re Steele*, 305 F.2d 859, 862 (CCPA 1962). For the reason discussed above regarding the rejection under 35 U.S.C. § 112, second paragraph, we consider the Appellants' claims 13-17 to be sufficiently indefinite that application of the prior art to the claims is not possible. On this basis, we do not sustain the rejection of those claims under 35 U.S.C. § 102(b). It should be understood that this reversal is not a reversal on the merits of the rejection but, rather, is a procedural reversal predicated upon the indefiniteness of the claims.

Rejection of claims 1-6, 8, 9, 31-35, 37 and 38 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk

Scerbo discloses an off-the-road vehicle having trailing road arms that permit the vehicle's height and attitude to be varied with respect to the ground to suit the terrain being traversed and the speed desired (col. 1, ll. 5-22). Each vehicle wheel is mounted on a separate road arm assembly (50) that has a lower axis (52) about which the wheel rotates and a second, upper axis (54) about which the road arm rotates (col. 2, ll. 18-21). Each wheel can be powered and steerable (fig. 4), non-powered but steerable (fig. 5), powered but non-steerable (fig. 6), or non-powered and non-steerable (fig. 7). When the wheels are powered, the power is provided to the front wheels by motor 24 via a differential (44) and drive shafts (46, 48), and is provided to the rear wheels by motor 24 via a transmission (26), a transverse differential (28), longitudinal differentials (32, 34), and drive shafts (35, 36, 38, 40) (col. 2, ll. 3-16). The road arm, which typically is positioned 30º downwardly from horizontal, can be rotated downwardly an additional 50º to raise the vehicle, and can be rotated to 55º above the horizontal to place the vehicle in the swimming mode wherein the wheels are entirely above the side frame of the vehicle and may be used to propel the vehicle through water (col. 3, l. 69 – col. 4, l. 2). Also, "the road arms of the downhill wheels may be rotated so that the respective axes thereof are below the 'horizontal,' thus raising the downhill side of the vehicle, while the road arms of the uphill wheels may be rotated so that the respective axes thereof

are above the 'horizontal,' whereby the vehicle and load may be oriented substantially horizontally" (col. 4, ll. 7-13).

Kozowyk discloses "[a]n apparatus for actuating and controlling the variable ground clearance of tracked or wheeled vehicles" (col. 1, ll. 14-15). The vehicle height is controlled by selectively raising or lowering any combination of vehicle wheels (col. 1, ll. 19-21). Each wheel has a suspension unit consisting of a road arm (116), a torsion bar (54), a torsion tube (32) and a hydraulically controlled gearing actuator (10) (col. 3, ll. 40-42; fig. 2). Each wheel is raised or lowered by rotating a lever (44) mounted on a hydraulic control valve (42) located adjacent to actuator 10, thereby causing actuator 10 to rotate torsion bar 54 on which the wheel is mounted (col. 1, ll. 16-19; col. 2, ll. 59-61; figs. 2, 3).

The Appellants argue that Scerbo and Kozowyk are not combinable because Scerbo pertains to wheeled vehicles whereas Kozowyk pertains to tracked vehicles (Br. 11; Reply Br. 5-8).

The Appellants do not point out, and it is not apparent, where Kozowyk indicates that the mechanical actuator and torsion bar system is limited to tracked vehicles. Kozowyk's disclosure that the suspension system is "adapted to change vehicle ground clearance positions of any tracked or wheeled vehicle" (col. 1, ll. 24-26) indicates that the suspension system applies to wheeled vehicles as well as tracked vehicles.

The Appellants argue that "one skilled in the art working with a trailing arm suspension system for the powered wheels of a wheeled vehicle

would have no reason to reference an implementation for an unpowered road wheel in a tracked vehicle" (Br. 11).

As pointed out vehicle above, Kozowyk is not limited to tracked vehicles. Because Kozowyk pertains to vehicle height control, one of ordinary skill in the art would have considered the relevance of Kozowyk's approach to Scerbo's system.

The Appellants argue that Kozowyk's suspension system is intended to raise the height of a vehicle hull to pass over obstacles, not to position wheels to execute commanded maneuvers to negotiate complex obstacles based upon terrain perception (Br. 11).

Scerbo's system also is not intended to position wheels to execute commanded maneuvers to negotiate complex obstacles based upon terrain perception. Scerbo's system raises and lowers the vehicle hull using three road arm positions; a typical downwardly-rotated 30º position, a downwardly-rotated 80º position, and an upwardly-rotated 55º swimming position (col. 3, l. 69 – col. 4, l. 2). Also, the downhill wheels can be lowered with respect to the uphill wheels to maintain a horizontal orientation of the vehicle hull (col. 4, ll. 2-13). Kozowyk's disclosure of using a drive on each wheel to control each wheel individually to raise, lower or cant the vehicle (col. 3, ll. 40-44) would have led one of ordinary skill in the art to use such a drive on each of Scerbo's wheels to provide the benefit of control of each wheel rather than only the downhill or uphill wheels. As stated by the Supreme Court in *KSR Int'l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007), "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." *KSR*, 127 S.Ct. at 1740. The Court in *KSR* further stated that "the [obviousness determination] 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."). *KSR*, 127 S.Ct. at 1741.

The Appellants argue that Scerbo's wheels are powered, whereas Kozowyk's wheels are unpowered and idle (Br. 11).

The Appellants do not point out, and it is not apparent, where Kozowyk limits the disclosed height control technique to unpowered wheels. Kozowyk's describes a height control system having a drive on each wheel for raising and lowering the vehicle, but does not disclose that the drive cannot be used on a powered wheel. As pointed out above, Kozowyk would have led one of ordinary skill in the art, through no more than ordinary creativity, to use Kozowyk's technique in Scerbo's system to provide the benefit of the ability to raise and lower each wheel individually, thereby providing more flexibility in the height control.

Regarding claims 31-35, 37 and 38 the Appellants argue that Scerbo's road arm assemblies 50 cannot rotate above the plane of vehicle 10 because such rotation would be blocked by the vehicle's chassis (Br. 12).

Taking the plane of the vehicle to be the plane along the bottom of the vehicle, in Scerbo's 55º upward rotation swimming position the wheel

assembly is rotated completely above the plane of the vehicle (fig. 3). Even if the plane of the vehicle is considered to be the plane through the center of rotation of the road arms, Scerbo's figure 3 shows that in the 55º swimming position at least part of the wheel assembly is rotated above the plane of the vehicle, which is all the Appellants' claims require.

For the above reasons we are not persuaded of reversible error in the rejection of claims 1-6, 8, 9, 31-35, 37 and 38 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk.

Rejection of claims 10, 11, 39 and 40 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk and Burton

Burton discloses "a power generating device incorporated in a wheel of a motor vehicle for use in charging the motor vehicle battery as well as to act as a brake" (col. 1, ll. 6-9). The device includes slip rings (42, 43) arranged concentrically of a disc member (36) and insulatingly and concentrically secured on disc member 36 on its inner surface (col. 2, ll. 60-67).

The Appellants argue that Burton is outside the Appellants' field of endeavor (Br. 13; Reply Br. 8-11).

The Appellants' field of endeavor is vehicle drive systems, and Burton is within that field of endeavor.

Accordingly, we are not persuaded of reversible error in the rejection of claims 10, 11, 39 and 40 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk and Burton.

Rejections under 35 U.S.C. § 103 of claims 12 and 41 over Scerbo in view of Kozowyk and Ruf, claims 18, 19, 21, 28 and 29 over Wilcox in view of Burton, and claims 20 and 30 over Wilcox in view of Ruf

The Appellants argue that Burton does not remedy the deficiencies in Wilcox, or the combination of Scerbo and Kozowyk as to the above-discussed claims from which the rejected claims depend (Br. 14-15).

As pointed out above, the deficiencies argued by the Appellants do not exist.

Hence, we are not convinced of reversible error in the rejections under 35 U.S.C. § 103 of claims 12 and 41 over Scerbo in view of Kozowyk and Ruf, claims 28 and 29 over Wilcox in view of Burton, and claim 30 over Wilcox in view of Ruf. The rejections under 35 U.S.C. § 103 of claims 18, 19 and 21 over Wilcox in view of Burton, and claim 20 over Wilcox in view of Ruf are procedurally reversed due to the indefiniteness of the claims as discussed above.

DECISION

The rejection of claims 13-21 under 35 U.S.C. § 112, second paragraph, is affirmed. The rejection of claims 1, 2, 4, 5, 7-9, 13-17, 22-27, 31, 32 and 34-38 under 35 U.S.C. § 102(b) over Wilcox is affirmed as to claims 1, 2, 4, 5, 7-9, 22-27, 31, 32 and 34-38, and procedurally reversed as to claims 13-17. The rejection of claims 18, 19, 21, 28 and 29 under 35 U.S.C. § 103 over Wilcox in view of Burton is affirmed as to claims 28 and 29 and procedurally reversed as to claims 18, 19 and 21. The rejection

of claims 20 and 30 under 35 U.S.C. § 103 over Wilcox in view of Ruf is affirmed as to claim 30 and procedurally reversed as to claim 20. The rejections of claims 1-6, 8, 9, 31-35, 37 and 38 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk, claims 10, 11, 39 and 40 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk and Burton, and claims 12 and 41 under 35 U.S.C. § 103 over Scerbo in view of Kozowyk and Ruf are 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) (2007).

AFFIRMED

vsh

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