

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARCTIC CAT, INC.,
Petitioner,

v.

POLARIS INDUSTRIES, INC.,
Patent Owner.

Case IPR2014-01428
Patent 8,596,405 B2

Before MICHAEL W. KIM, WILLIAM V. SAINDON, and
RICHARD E. RICE, *Administrative Patent Judges*.

KIM, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. *Background*

Arctic Cat, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) for *inter partes* review of claims 1–38 of U.S. Patent No. 8,596,405 B2 (“the ’405 patent,” Ex. 1002) pursuant to 35 U.S.C. §§ 311–319. Polaris Industries, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6. On February 13, 2015, we instituted an *inter partes* review of claims 1–20, 22–33, and 35 on certain grounds of unpatentability alleged in the Petition. Paper 7 (“Dec.”). After institution of trial, Patent Owner filed a Patent Owner Response (Paper 23, “PO Resp.”)¹ and Petitioner filed a Reply (Paper 38, “Pet. Reply”).² An oral hearing was held on September 24, 2015. Paper 54 (“Tr”).

The Board has jurisdiction under 35 U.S.C. § 6(c). In this Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, we determine that Petitioner has not met its burden of showing, by a preponderance of the evidence, that all claims for which trial is instituted, claims 1–20, 22–33, and 35 are unpatentable.

B. *The ’405 patent*

The ’405 patent relates generally to side-by-side all-terrain vehicles (“ATV”) having at least a pair of laterally spaced apart seating surfaces. Ex. 1002, 1:10–14. Figures 1 and 9 illustrate an exemplary embodiment of ATV 10 of the ’405 patent, and are set forth below.

¹ A Protective Order concerning these papers was entered in this proceeding on June 29, 2015. Paper 31. Patent Owner filed a redacted version of the Patent Owner Response (Paper 22) concurrently with the unredacted version (Paper 23).

² A Protective Order concerning these papers was entered in this proceeding on November 18, 2015. Paper 55. Petitioner filed a redacted version of the Reply (Paper 37) concurrently with the unredacted version (Paper 38).

24a, 24b to ATV 10. Ex. 1002, 4:2–4. Rear end 14 of ATV 10 includes engine cover 19, which extends over a modular engine assembly positioned completely behind upper and lower seating surfaces 18a, 18b, 20a, 20b. Ex. 1002, 4:4–8.

C. *Related Matters*

Petitioner and Patent Owner identify the following related district court proceeding between Petitioner and Patent Owner that involves the '405 patent: *Arctic Cat, Inc. v. Polaris Industries, Inc.*, Nos. 0:13-cv-03579, 0:13-cv-3595 (D. Minn). Pet. 1; Paper 5, 2. Petitioner and Patent Owner also identify the following related petition for *inter partes* review that involves the same parties and the '405 patent: IPR2014-01427. Pet. 1; Paper 5, 2.

D. *Illustrative Claim*

Independent claim 1 is reproduced below:

1. An all-terrain vehicle including:
 - a frame, comprising a front frame portion, a mid frame portion and a rear frame portion;
 - a front suspension supported by the front frame portion;
 - at least two front wheels coupled to the front suspension;
 - a front axle assembly supported by the front frame portion and drivingly coupled to the front wheels;
 - a seating area supported by the mid frame portion, comprising side by side seats;
 - an engine supported by the rear frame portion, the engine positioned rearwardly of the seating area;
 - a transmission coupled to and extending rearwardly of the engine;
 - a rear suspension supported by the rear frame portion;
 - at least two rear wheels coupled to the rear suspension;
 - a rear axle assembly supported by the rear frame portion and drivingly coupled to the rear wheels;
 - a front drive shaft extending between the transmission and the front axle assembly for coupling the transmission to the front wheels;and

a rear drive shaft extending between the transmission and the rear axle assembly for coupling the transmission to the rear wheels.

E. Prior Art References Applied by Petitioner and Instituted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–38 on the basis of the following grounds and prior art (Pet. 8–51):

Reference(s)	Basis	Challenged Claims
Hickey ³ and Hill ⁴	§ 103(a)	1–3, 5–13, 20, 23, and 25–33
Hickey, Hill, and Furuhashi ⁵	§ 103(a)	4, 15–19, 22, and 24
Hickey, Hill, and Enokimoto ⁶	§ 103(a)	14
Hickey, Hill, and Johnson ⁷	§ 103(a)	35

Petitioner also cites two Declarations of Dr. Gregory W. Davis (Exs. 1001, 1069) and the Declaration of W. Christopher Bakewell (Ex. 1070).⁸ Patent Owner cites the Declaration of Dr. John J. Moskwa (Ex. 2029) and Declaration of John Jarosz (Ex. 2030).⁹

³ US 3,709,314 (“Hickey”) issued Jan. 9, 1973 (Ex. 1005).

⁴ US 3,407,893 (“Hill”) issued Oct. 29, 1968 (Ex. 1006).

⁵ US 5,327,989 (“Furuhashi”) issued July 12, 1994 (Ex. 1004).

⁶ US 5,251,713 (“Enokimoto”) issued Oct. 12, 1993 (Ex. 1007).

⁷ US 6,149,540 (“Johnson”) issued Nov. 21, 2000 (Ex. 1008).

⁸ A Protective Order concerning these papers was entered in this proceeding on November 18, 2015. Paper 55. Petitioner filed a redacted version of the Declaration of W. Christopher Bakewell (Ex. 1071) concurrently with the unredacted version (Ex. 1070).

⁹ A Protective Order concerning this paper was entered in this proceeding on June 29, 2015. Paper 31.

II. ANALYSIS

A. *Claim Construction*

In an *inter partes* review, a claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1277–78 (Fed. Cir. 2015) (“We conclude that Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA.”), *cert. granted sub nom. Cuozzo Speed Techs. LLC v. Lee*, 72016 WL 205946 (U.S. Jan. 15, 2016) (No. 15-446). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). We must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

1. “coupled” or “coupling”

Each of claims 1, 8, 9, 11, 18, and 19 recite one of “coupled” or “coupling.” In the Decision on Institution, based on Petitioner’s position and evidence (Pet. 4–5), we construed “coupled” or “coupling” as “connected or connecting directly or indirectly.” Dec. 6–7. After the Decision on Institution, neither Patent Owner nor Petitioner has expressed disagreement with this construction. After considering anew the basis for our previous construction, we see no need for modification.

2. “*supported by*”

Each of claims 1, 11, 12, 28, and 34 recite “supported by.” In the Decision on Institution, based on Petitioner’s position and evidence (Pet. 5–6), we construed “supported by” as “all or part of the weight being carried by.” Dec. 7. After the Decision on Institution, neither Patent Owner nor Petitioner has expressed disagreement with this construction. After considering anew the basis for our previous construction, we see no need for modification.

3. “*drive shaft*”

Independent claim 1 recites “a front drive shaft” and “a rear drive shaft.” Patent Owner asserts that a proper construction of “drive shaft” is a shaft structure that transmits torque, together with connecting hardware (e.g. universal joints, couplers, and bearings), and excludes interaxle differentials. PO Resp. 18–20 (citing Exs. 1001, 1002, 2029, 2084, 2086). Petitioner does not dispute this construction. We agree partially with Patent Owner’s proposed construction.

The only portions of the specification that address any type of “shaft” is as follows:

As shown in FIG. 19, output shaft 138 extends under protective panel 134. Protective panel 134 is positioned behind upper and lower seating surfaces 18a, 18b and 20a, 20b and protects passengers in ATV 10 from moving parts of modular engine assembly 34, as well as, assists in shielding from noise. The extending end of output shaft 138 includes splined portion 140 which is adapted to engage the interior circumference of coupler 142. Coupler 142 is coupled to universal joint 144. Universal joint 144 connects coupler 142 to front drive shaft 146 which powers the front wheels of ATV 10. Coupler 142 may move in a fore and aft direction on splined portion 140 of output shaft 138 while remaining engaged with splined portion 140. During vigorous driving, front drive shaft 146 may move in the fore and aft direction causing coupler 142 to slide longitudinally on splined portion 140 of output

shaft 138 while front drive shaft 146 remains rotationally coupled with output shaft 138.

Ex. 1002, 7:41–57.

Universal joint 244 is coupled to an upper end of steering shaft 246. The lower end of steering shaft 246 is coupled to universal joint 248 which translates the rotation of steering shaft 246 to a front gearbox assembly 247 and steering arms 208 (FIG. 22) to turn front wheels 24.

Ex. 1002, 10:21–25. Based on these disclosures, we are unpersuaded that a proper construction of “drive shaft” would include “universal joints, couplers, and bearings,” as the aforementioned disclosures indicate that various shafts/drive shafts 138, 146, 246 are themselves coupled to each other, as well as coupler 142 and universal joints 144, 248. By contrast, the aforementioned portion of the specification also discloses that “output shaft 138 includes splined portion 140” and “splined portion 140 of output shaft 138,” indicating that the drafter knew how to indicate that a feature was a part of another feature, if so desired. *Accord* Ex. 2084 ¶ 12 (original application included a claim reciting “the drive shaft including a coupler adapted to operably couple with the splined output shaft”). This is confirmed by Dr. Moskwa’s Declaration, which asserts that “[o]ne of ordinary skill would have reasonably understood that the shaft structure *could* be multipart, and that it *could* include related componentry (e.g., universal joints, couplers and bearings).” Ex. 2029 ¶ 56 (emphasis added). When considering two reasonable constructions, one narrower and one broader, we generally apply the broader of two reasonable constructions, which in this instance would construe “drive shaft” as excluding “universal joints, couplers, and bearings,” especially where the broader construction has more support in the specification. Also, given that a proper construction of “drive shaft” excludes “universal joints, couplers, and bearings,” it would also exclude interaxle differentials.

The balance of Patent Owner's construction, that a "drive shaft" is a shaft structure that transmits torque, is supported by paragraph 56 of the Declaration of Dr. Moskwa, and is consistent with the aforementioned portions of the specification. Accordingly, we construe "drive shaft" as a shaft structure that transmits torque, and excludes other hardware, such as universal joints, couplers, bearings, and interaxle differentials.

4. *"extending between"*

Independent claim 1 recites "a front drive shaft extending between the transmission and the front axle assembly" and "a rear drive shaft extending between the transmission and the rear axle assembly." Essentially, Patent Owner asserts that a given drive shaft must account for the entire distance between the transmission and the respective axle assembly in order to meet the aforementioned claim limitation, whereas Petitioner asserts that if the given drive shaft accounts for any amount of distance between the transmission and the respective axle assembly, the aforementioned claim limitation is met. PO Resp. 15–18 (citing Exs. 1002, 2029, 2085); Pet. Reply 2–7 (citing Exs. 1002, 1069, 2085). We discern that the key limitation in this regard is "extending between," or more generically, "extend between." Patent Owner provides excerpts from Merriam-Webster's Dictionary concerning the definition of "extend," of which the pertinent definitions would be as follows: "to stretch out to fullest length"; "to cause to reach (as in distance or scope)"; "to stretch out in distance, space, or time"; "to reach in scope or application." Ex. 2085, 442–443. Use of words such as "fullest" and "reach" would appear to support Patent Owner's proposed construction. When these definitions of "extend" are combined with the word "between," which introduces the concept of discrete distances, we are persuaded that to "reach" a "fullest" discrete distance supports even further Patent Owner's proposed construction.

Patent Owner identifies the following portions of the specification as informing one of ordinary skill as to what is meant by “extend between,” and it is consistent with the aforementioned plain and ordinary meaning of “extend between”:

In the illustrative embodiment shown in FIG. 2, wheelbase A, which *extends between* the center of front axle 36 and the center of rear axle 38, is equal to about 77 inches (195.6 centimeters).

Ex. 1002, 4:11–14 (emphasis added).

In the illustrative embodiment, width C, which is defined as the overall width of ATV 10, *extends between* the outermost lateral points of ATV 10.

Ex. 1002, 4:30–32 (emphasis added). Figures 2 and 3 of the '405 patent are set forth below.

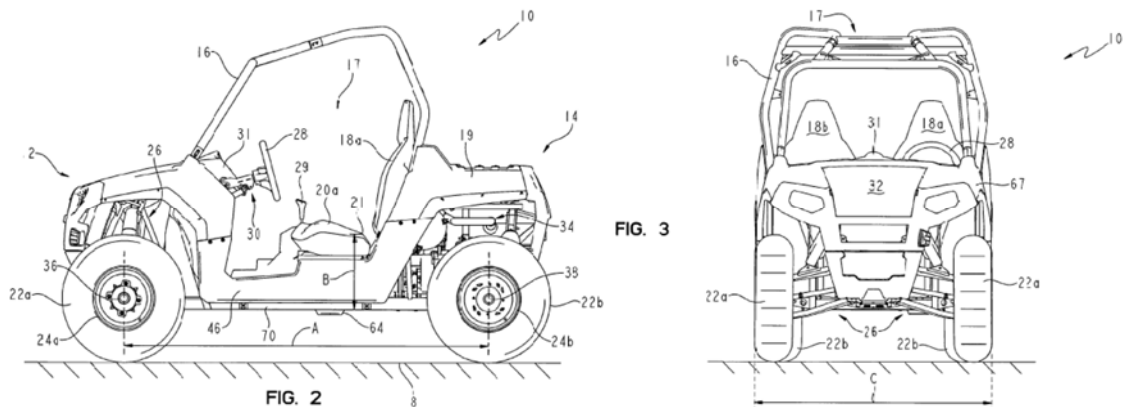


Figure 2 is a profile view of a side-by-side ATV, and Figure 3 is a front view of the side-by-side ATV.

In the aforementioned portions of the specification, the depiction of wheelbase A and width C makes clear that “extend between” is meant to account for the entire distance between two points or objects. This is confirmed further by the following portions of the specification, also identified by Patent Owner, where the indicated item, as depicted in the appropriate figure, also accounts for the entire distance between two points or objects: “[f]ront brackets 162 and rear brackets 160 *extend*

between lower tubes 180 and down tubes 105,” as shown in Figure 20 (Ex. 1002, 8:2–4 (emphasis added)); “[u]pper ends of dampeners 217 are pivotally coupled to bracket 223 *extending between* rear tubes 207,” as shown in Figure 22 (Ex. 1002, 8:51–53 (emphasis added)). That all the uses of “extend between” in the specification are consistent with each other is not in doubt.

Petitioner asserts that Patent Owner’s position is problematic, however, because even Patent Owner admits that neither drive shaft in the specification accounts for the entire distance between the transmission and the respective axle assembly. Specifically, Petitioner asserts, and we agree, that Figure 19 of the specification discloses front drive shaft 146 connected to transmission 136 via output shaft 138, coupler 142, and universal joint 144. Accordingly, because front drive shaft 146 does not account for the entire distance between the transmission and the front axle assembly, and as we have construed above, a “drive shaft” does not include universal joints, couplers, bearings, Petitioner asserts that we must construe “extend between” as being met if a given drive shaft accounts for any amount of distance between the transmission and the respective axle assembly.

We determine that Petitioner’s assertions are unpersuasive. Both the plain and ordinary meaning and specification’s disclosure concerning the exact words “extend between” supports Patent Owner’s proposed construction. We acknowledge that there may appear to be an incongruity between the claim language and the only embodiment of the specification, Figure 19, concerning relative positioning of the drive shaft, transmission, and axle assembly, on closer examination. Nevertheless, we are unpersuaded that this apparent incongruity should alter the plain and ordinary meaning, which is otherwise consistent with the specification, for several reasons.

Most significantly, Figure 19, and the corresponding portions of the specification, does not actually use the words “extend between” to describe the relationship between front drive shaft 146 and any other component, let alone transmission 136 or any axle assembly. On closer examination of the prosecution history, this is unsurprising as the ’405 patent, which issued from U.S. Patent Application No. 12/925,560 (“the ’560 application”), is a continuation of U.S. Patent Application No. 11/494,891 (“the ’891 application”), and the original claims recited in the ’891 application do not include “a front drive shaft extending between the transmission and the front axle assembly” and “a rear drive shaft extending between the transmission and the rear axle assembly.” Ex. 3001. Claims including those limitations were added later, for example, in the originally-filed ’560 application. In other words, no portion of the specification, including Figure 19, provides literal, word-for-word written description support for the aforementioned claim limitations. If there is no literal, word-for-word written description support for the aforementioned claim limitations, there is no need to reconcile Patent Owner’s proposed construction of “extend between,” which has a plain and ordinary meaning that has a solid basis in the specification, with Figure 19 of the specification which, as originally-filed, did not recite expressly “extend

between.”¹⁰ *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (“this court has expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.”)

Petitioner’s other assertions concern extrinsic evidence, which we have considered, but determine that they do not outweigh the intrinsic evidence set forth above. And, even if we agreed with Petitioner, there would need to be another analysis, with no clear answers, as to how much extension is enough, *e.g.*, whether an oblong dot “extends between” whereas a circular dot would merely be “positioned between.” Tr. 26:3–27:21; 86:8–88:2. We determine that such ambiguity also weighs against Petitioner’s construction.

Accordingly, we construe “a front drive shaft extending between the transmission and the front axle assembly” and “a rear drive shaft extending between the transmission and the rear axle assembly” as requiring that a given

¹⁰ 35 U.S.C. § 311 reads “[a] petitioner in an inter partes review may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications.” No statutory authority recites expressly that an *inter partes review* may take into account, and we do not opine, on whether the claim limitation at issue meets or does meet the requirements of 35 U.S.C. § 112, first paragraph. In any case, unlike a determination under 35 U.S.C. § 112, second paragraph, for indefiniteness, because we are able to discern the metes and bounds of the claim in a manner sufficient to apply the prior art at issue, even if the claims at issue did not meet the requirements of 35 U.S.C. § 112, first paragraph, there would still be no need to terminate the proceeding. *Compare Blackberry Corp. v. MobileMedia Ideas, LLC*, IPR2013-00036, slip op. at 12–21 (PTAB Mar. 7, 2014) (Paper 65) (terminating IPR proceeding where Board was unable to reach a determination on the grounds of unpatentability based on the prior art, because a claim limitation was indefinite).

drive shaft, and only that given drive shaft, must account for the entire distance between the transmission and the respective axle assembly.

B. Claims 1–3, 5–13, 20, 23, and 25–33 and Unpatentable Over Hickey and Hill

Petitioner contends that claims 1–3, 5–13, 20, 23, and 25–33 are obvious over a combination of Hickey and Hill. Pet. 8–28 (citing Exs. 1001, 1005, 1006). Claim 1 is the only independent claim among those claims. Patent Owner disagrees. PO Resp. 22–46, 56–60 (citing Exs. 1001, 1005, 1006, 2008, 2014, 2026, 2029, 2030, 2032, 2066). Petitioner replies. Pet. Reply. 7–25 (citing Exs. 1001, 1002, 1004, 1005, 1034, 1035, 1069, 1070, 2023, 2024, 2030).

1. Hickey (Ex. 1005)

Hickey relates to a wheeled, high speed, cross-country, rough terrain vehicle. Ex. 1005, 1:11–15. Figures 1, 2, 4, and 5 of Hickey are set forth below:

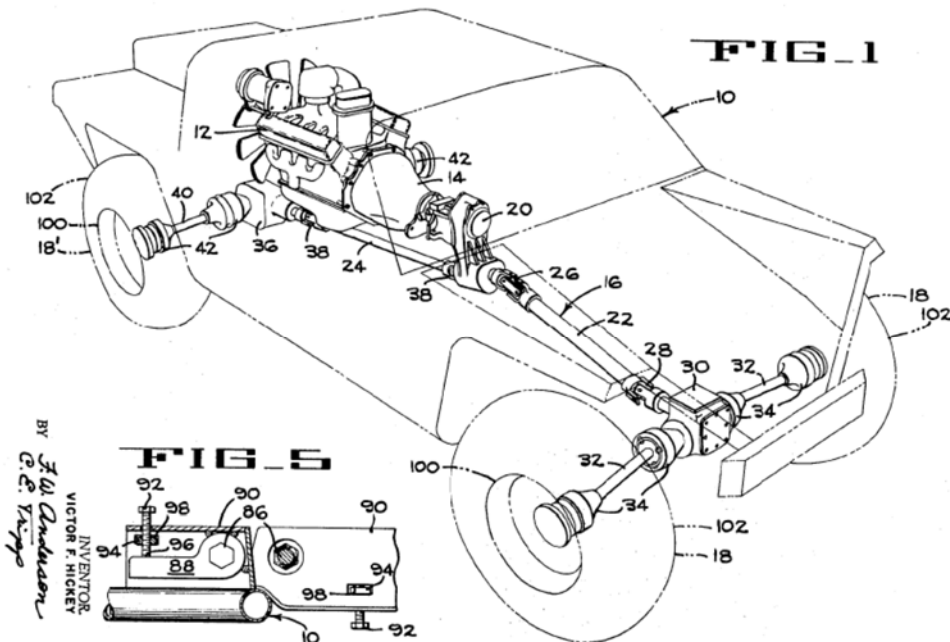


Figure 1 is a diagrammatic perspective view of a vehicle including a four-wheel drive power train. Figure 5 is an enlarged view of a torsion bar mounting and anchors.

Hickey discloses frame 10 including engine 12 coupled to transmission 14. Ex. 1005, 1:60–64. Transmission 14 is connected to drive train 16, which includes interaxle differential 20, which divides power from transmission 14 to front propeller shaft 22 and rear propeller shaft 24. Ex. 1005, 2:3–6. Constant velocity double universal joint 26 connects front propeller shaft 22 to interaxle differential 20. Ex. 1005, 2:4–11. Front propeller shaft 22 connects to front differential 30, which then drives front wheels 18 via front drive shafts 32. Ex. 1005, 2:6–11, 21–24. Rear wheels 18' are driven from rear propeller shaft 24 via rear differential 36 and rear drive shafts 40. Ex. 1005, 2:25–32. Suspension units 44 include upper A frame arm 46 and lower A frame arm 48, which connect frame 10 and wheels 18, 18'. Ex. 1005, 2:64–3:9.

2. *Analysis*

Based on the information presented in the Petition, Patent Owner Response, and Reply, as well as all supporting evidence, we are not persuaded that Petitioner has shown, by a preponderance of the evidence, that claims 1–3, 5–13, 20, 23, and 25–33 are obvious over a combination of Hickey and Hill. Pet. 8–28; PO Resp. 22–46, 56–60; Pet. Reply. 7–25. Independent claim 1, the only independent claim at issue, recites “a front drive shaft extending between the transmission and the front axle assembly.” As set forth above, we construe the aforementioned claim limitations as requiring that a front drive shaft, and only that front drive shaft, must account for the entire distance between the transmission and the front axle assembly.

Petitioner cites front propeller shaft 22 of Hickey as corresponding to the aforementioned “front drive shaft.” Front propeller shaft 22 is connected to transmission 14, however, via at least interaxle differential 20 and universal joint 26. Figure 1 of Hickey discloses that that front propeller shaft 22 stops well short

of transmission 14, and so does not account for the entire distance between the transmission and the front axle assembly. While there could perhaps be some overlap in the distance covered by front propeller shaft 22, interaxle differential 20, and universal joint 26, Petitioner has not shown such overlap, and in any case, we determine that any such overlapping part of front propeller shaft 22 still would not account for the entire distance between the transmission and the front axle assembly. Accordingly, we determine that Hickey does not disclose or suggest “a front drive shaft extending between the transmission and the front axle assembly,” as recited in independent claim 1. Moreover, Petitioner does not cite Hill for remedying the aforementioned deficiencies of Hickey. Each of dependent claims 2, 3, 5–13, 20, 23, and 25–33 depend ultimately from independent claim 1, and include the same deficiency.

3. *Conclusion*

For the reasons set forth above, we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 1–3, 5–13, 20, 23, and 25–33 are obvious over a combination of Hickey and Hill.

C. Dependent Claim 4, 15–19, 22, and 24 as Unpatentable Over Hickey, Hill, and Furuhashi; Dependent claim 14 as Unpatentable Over Hickey, Hill, and Enokimoto; and Dependent Claim 35 as Unpatentable Over Hickey, Hill, and Johnson

Petitioner contends that dependent claims 4, 15–19, 22, and 24 are obvious in view of Hickey, Hill, and Furuhashi, dependent claim 14 is obvious in view of Hickey, Hill, and Enokimoto, and dependent claim 35 is obvious in view of Hickey, Hill, and Johnson. Pet. 28–41 (citing Exs. 1001, 1004, 1005, 1006). Each of claims 4, 14–19, 22, 24, and 35 depend ultimately from independent claim 1. Petitioner does not cite any of Furuhashi, Enokimoto, and Johnson for remedying the aforementioned deficiency of Hickey and Hill with respect to independent

claim 1. Accordingly, we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 4, 15–19, 22, and 24 are obvious in view of Hickey, Hill, and Furuhashi, dependent claim 14 is obvious in view of Hickey, Hill, and Enokimoto, and dependent claim 35 is obvious in view of Hickey, Hill, and Johnson.

III. CONCLUSION

Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1–38 of the '405 patent are unpatentable. Patent Owner's Motion to Exclude is *dismissed* as moot.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–20, 22–33, and 35 of the '405 patent are held patentable over the grounds set forth herein¹¹; and

FURTHER ORDERED that because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

¹¹ Claims 1–38 were determined to be unpatentable on different grounds in a Final Written Decision issued concurrently in IPR2014-01427.

IPR2014-01428
Patent 8,596,405 B2

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