

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

THE TORO COMPANY
Petitioner,

v.

MTD PRODUCTS INC.,
Patent Owner.

Case IPR2016-01352
Patent 9,254,865

Before WILLIAM V. SAINDON, RICHARD E. RICE, and
TIMOTHY J. GOODSON, *Administrative Patent Judges*.

SAINDON, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner requests an *inter partes* review of claims 1–20 of U.S. Patent No. 9,254,865 (Ex. 1001, “the ’865 patent”). Paper 1 (“Pet.”). Patent Owner filed a Preliminary Response to the Petition. Paper 8 (“Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the Petition and Patent Owner’s Preliminary Response, we do not institute an *inter partes* review on any challenged claim of the ’865 patent.

A. Related Matters

The parties represent that the ’865 patent is asserted in *MTD Products Inc. v. Toro Company et al.*, 1:16-cv-00297 (N.D. Ohio). Pet. 1; Paper 5, 2. Petitioner also has filed petitions challenging Patent Owner’s U.S. Patent No. 8,011,458 (IPR2016-00194) and U.S. Patent 8,136,613 (IPR2016-00219). Patent Owner identifies U.S. Patent No. 7,992,659 as a related patent and U.S. Patent Application No. 13/081,482 as a related patent application. Paper 5, 2.

B. The ’865 Patent

The ’865 patent is directed to a steering and driving system. Ex. 1001, Abstract. In particular, the patent is directed to the steering systems of Zero Turn Radius (ZTR) lawn mowers. *Id.* at 1:22–24. There is a known angular relationship for front steering wheels to obtain a given turn radius without causing the wheels slide or scuff, called the Ackermann steering

geometry. *Id.* at 7:61–8:10; *see also* Ex. 1007 ¶¶ 76–82 (Petitioner’s declarant testifying as to how wheels would align to perform a zero-degree turn); Ex. 2002 ¶¶ 40–72 (Patent Owner’s declarant providing an explanation of Ackermann steering geometry). Figures 3A and 3B of the ’865 patent show the steering angles for a tight right turn (3A) and a zero-degree turn (3B):

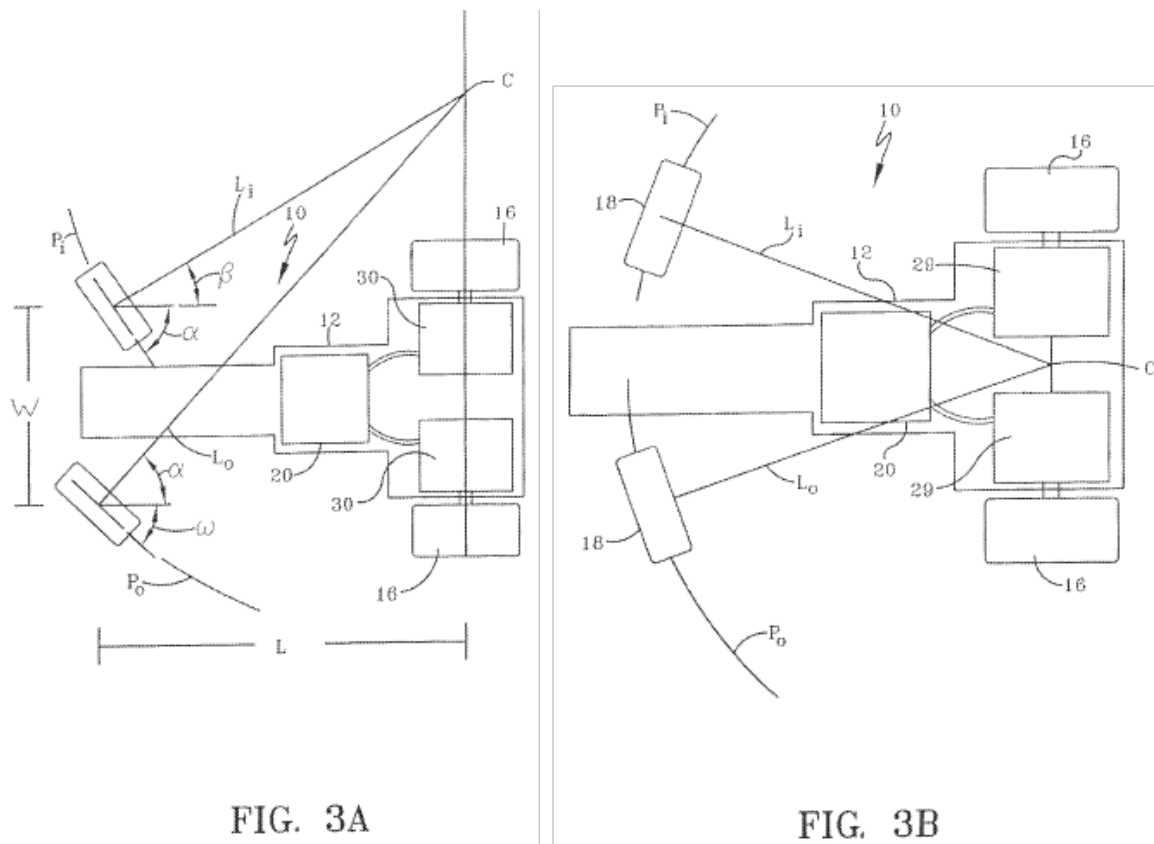


Figure 3A depicts the angles of the front wheels of a vehicle making a tight right hand turn around a center point C. Figure 3B depicts the vehicle making a zero-radius turn around center point C.

Accordingly, for front wheels to comport with Ackermann steering geometry to prevent scuffing or sliding in zero-degree turns, the wheels must be configured in a certain way. The '865 patent explains, for example, that the wheels are configured to allow for greater than 90 degree turns. Ex.

1001, 10:19–23; Fig. 3B. Further, the rate at which the steering and wheel gears turn must vary depending on the desired turn, in order to achieve Ackermann steering. *Id.* at 11:12–16; *see also id.* at 11:59–12:58 (describing the need for non-circular gears to achieve non-uniform gear ratios).

C. Challenged Claims

Petitioner challenges claims 1–20, of which claims 1, 11, and 16 are independent. Claim 1 is reproduced below.

1. A vehicle comprising:
 - a chassis;
 - a left front steerable, non-driving wheel coupled to the chassis and capable of turning more than 90 degrees left;
 - a right front steerable, non-driving wheel coupled to the chassis and capable of turning more than 90 degrees right;
 - left and right rear drivable wheels coupled to left and right hydrostatic drive units;
 - a first gear pair that turns the right front steerable, non-driving wheel, the first gear pair comprising:
 - a first wheel gear having a first wheel gear pivot axis and a first wheel gear pitch line that changes in distance from the first wheel gear pivot axis; and
 - a first steering gear engaged with the first wheel gear, the first steering gear having a first steering gear pivot axis and a first steering gear pitch line that changes in distance from the first steering gear pivot axis;
 - a second gear pair that turns the left front steerable, non-driving wheel, the second gear pair comprising:
 - a second wheel gear having a second wheel gear pivot axis and a second wheel gear pitch line that changes in distance from the second wheel gear pivot axis; and
 - a second steering gear engaged with the second wheel gear, the second steering gear having a second steering gear pivot axis and a second steering gear pitch line that changes in distance from the second steering gear pivot axis;

- a steering wheel that can receive a steering input from an operator of the vehicle;
 - a speed pedal that can receive a speed input from an operator of the vehicle;
 - first and second speed cams oriented parallel to each other and coupled to the speed pedal, the first speed cam including a first curved slot and the second speed cam including a second curved slot, the first and second curved slots having the same shape, where movement of the speed pedal causes the first and second speed cams to rotate in the same direction and by the same amount about an axis extending through each of the first and second curved slots;
 - a first follower that rides in the first curved slot and that will move in response to steering wheel movement to a righthand turn from a straight-ahead position; and
 - a second follower that rides in the second curved slot and that will move in response to steering wheel movement to a left-hand turn from a straight-ahead position;
- where the left and right hydrostatic drive units are capable of driving the left and right rear drivable wheels at different speeds and in different directions; movement of the steering wheel without a speed input from the speed pedal does not cause rotation of the left and right rear drivable wheels; and the same one of the left and right rear drivable wheels will rotate faster than the other of the left and right rear drivable wheels in both forward and reverse for a turned position of the steering wheel.

D. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–20 of the '865 patent are unpatentable under 35 U.S.C. § 103 on the following grounds:

References	Claims Challenged
Hauser ¹ and Irikura ²	1–20

¹ U.S. Patent No. 6,962,219 B2, issued Nov. 8, 2005 (Ex. 1002).

² U.S. Patent No. 7,004,268 B2, issued Feb. 28, 2006 (Ex. 1004).

References	Claims Challenged
Hauser, Irikura, and Hoch ³	11–20
Irikura, Barnes, ⁴ and Hoch	1–20

Petitioner also relies on the declaration of Fred P. Smith, a Professional Engineer with a background in mechanical engineering. Ex. 1007 ¶ 4.

II. ANALYSIS

A. Claim Construction

No claim terms require construction for us to decide the merits of the Petition.

B. *Hauser and Irikura (Claims 1–20)* *Hauser, Irikura, and Hoch (Claims 11–20)*

Independent claims 1, 11, and 16 require a vehicle having two hydrostatic drive units for driving the rear wheels, and two steerable non-driving front wheels. Petitioner proposes to modify the “tractor-like mower” of Hauser, which it alleges has two hydrostatic drive units driving rear wheels but non-steerable caster front wheels, to have the steerable front wheels shown in Irikura. Pet. 14. Petitioner reasons that Irikura teaches replacement of caster wheels for steerable wheels because steerable wheels allow users to “comprehend the direction of driven wheels and stably operate the vehicle on a slope.” *Id.* at 15 (citing Ex. 1004, 5:59–64).

Patent Owner offers several arguments why Petitioner’s ground is insufficient. In summary, Patent Owner’s argument is that Petitioner has not

³ U.S. Patent No. 5,152,382, issued Oct. 6, 1992 (Ex. 1005).

⁴ U.K. Patent App. GB 2,303,829 A, published March 5, 1997 (Ex. 1006).

established a reason to modify the front wheels of Hauser's ZTR vehicle with the front wheel steering assembly of Irikura because Petitioner has not established that Irikura's steering assembly is capable of a zero-radius turn. Prelim. Resp. 27–29 (arguing Irikura does not disclose zero-radius turns), 10–16 (same), 55–63 (arguing no reason to combine). In other words, Patent Owner argues that a person of ordinary skill in the art would not look to Irikura's non-ZTR steering assembly for use in the ZTR steering assembly in Hauser. For the reasons that follow, this argument is persuasive.

Petitioner does not offer a threshold amount of evidence explaining why a person of ordinary skill in the art, looking to improve the ZTR vehicle of Hauser by adding steered wheels, would choose the front wheel steering assembly of Irikura. First, Petitioner does not direct us to evidence that Irikura itself is a ZTR vehicle or describes a steering assembly for zero-degree turns. Indeed, Patent Owner points out that Irikura is likely incapable of zero-degree turns, because Irikura describes a six-wheeled vehicle, and the back four fixed driving wheels would scuff in a zero-degree turn attempt. Prelim. Resp. 11–13 (citing Ex. 2002 ¶¶ 49, 50, 54, 209); *see also* Ex. 2002 ¶¶ 48–50 (stating the well-understood principle that the rotation axis of the wheel must intersect the turn radius in order not to scuff or slide), ¶¶ 207–211 (explaining why the four fixed wheels indicate that the vehicle does not make zero-degree turns). On this record, Petitioner has not shown that the vehicle in Irikura is a ZTR vehicle or is designed purposefully for zero-degree turns because there is no discussion of such a feature, and the six-wheel nature of the vehicle indicates otherwise.

Second, Petitioner's evidence that Irikura's steering assembly nonetheless is capable of zero-degree turns is unpersuasive. Petitioner

reasons that “in order for Irikura’s front steerable wheels not to slide or scuff” during a zero-degree turn, they must be configured to move in a way that provides a zero-degree turn. Pet. 16; *see also id.* at 16–18 (providing the full analysis). This reasoning is circular. Given the lack of disclosure in Irikura of zero-degree turning, there is no reason to believe that Irikura’s steering assembly is configured to avoid sliding or scuffing during such a turn. Petitioner directs us to its drawings of the front steering assembly in Irikura to show otherwise, but Petitioner’s analysis is based on two faulty presumptions.

Petitioner’s first faulty presumption is to ignore that Irikura discloses a six-wheel vehicle. *See* Pet. 16–18 (depicting Irikura as a four-wheel vehicle); Ex. 1007 ¶¶ 76–81 (Petitioner’s declarant, Mr. Smith, depicting Irikura as a four-wheel vehicle).⁵ Patent Owner points out that a six-wheel vehicle having four fixed wheels would not generally be considered capable of performing zero-degree turns because the back wheels would slide or scuff. Prelim. Resp. 11–13, 58 (citing Ex. 2002 ¶¶ 208–211). This makes Petitioner’s next faulty presumption more apparent.

Petitioner’s second faulty presumption is that the drawings in Irikura can be used to measure particular, precise gearing relationships when the specification is silent as to the matter. *Hockerson-Halberstadt, Inc. v. Avia Group Int’l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000) (“[P]atent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the

⁵ To the extent these figures are intended to depict the Hauser vehicle, modified to have Irikura’s front steering assembly, Petitioner’s analysis still would not have considered the four rear wheels of Irikura.

issue.”). Petitioner directs us to its declarant, Mr. Smith, who uses modified versions of Irikura’s drawings to depict various steering angles. Pet. 16 (citing Ex. 1007 ¶¶ 76–83). Mr. Smith’s analysis allegedly “show[s] the wheels and gears of Irikura’s front steering assembly able to turn the wheels to effect small and zero radius turns.” Ex. 1007 ¶ 76. His drawings then show several modified versions of Irikura’s assembly. *Id.* ¶¶ 77–81. Mr. Smith never explains, however, the factual basis for his belief that Irikura would be capable of zero-degree turns in the first instance. Instead, he simply modifies the drawings to show them performing zero-degree turns; there is insufficient technical explanation or evidence explaining why the steering assembly is capable of the movements shown in the modified drawings.

In summary, we are not persuaded that a person of ordinary skill in the art would have considered modifying the front caster wheels of Hauser with the front steerable wheels of Irikura because Hauser is a ZTR vehicle and Petitioner has not established sufficiently that Irikura’s front steerable wheels are capable of providing zero-degree turns. For this reason, Petitioner has not shown a reasonable likelihood of prevailing on the ground of obviousness in view of Hauser and Irikura. This deficiency also applies to the Hauser-Irikura-Hoch ground, which makes use of the same combination of Hauser and Irikura. See Pet. 42 (stating that “the combination of Hauser and Irikura disclose[s] each and every element of claims 1-20,” but providing Hoch for limitations in claim 11 and 16, to the extent they are not disclosed).

C. Irikura, Barnes, and Hoch (Claims 1–20)

Independent claims 1 and 11 both require, in some form, front wheels capable of performing a zero-degree turn.⁶ Accordingly, this ground fails as to those claims (and their dependents) because Petitioner relies on Irikura to teach these limitations (Pet. 47, 57) but, as we discussed above, Petitioner has not offered sufficient evidence that Irikura has front wheels capable of performing a zero-degree turn. Independent claim 16, however, does not have such a limitation.

The ground as it applies to claim 16 starts with the steering and drive assembly of Irikura, and modifies the particular speed control device to be as shown in Barnes. Pet. 65–69. As to the limitation requiring the maximum reverse speed to be less than the maximum forward speed, Petitioner points to Hoch’s disclosure of a vehicle in which the speed is limited when in reverse mode. Pet. 68 (citing Ex. 1005, 3:35–42, 6:36–7:15). Patent Owner argues that Petitioner has not explained sufficiently the combination with respect to Hoch, and alleges that Petitioner has not addressed the divergent designs in Irikura-Barnes versus Hoch. Prelim. Resp. 69–71.

Petitioner’s explanation of why and how to incorporate Hoch with Irikura and Barnes is limited to a statement that it would have been obvious to “otherwise incorporate the basic safety functionality and vehicle components disclosed in Hoch.” Pet. 45 (citing Ex. 1007 ¶¶ 217–221). Turning to the cited portions of Mr. Smith’s testimony, however, we do not find a discussion regarding the safety functionality of Hoch referenced by Petitioner. Pet. 68 (citing Ex. 1007 ¶¶ 316, 351); Ex. 1007 ¶¶ 316, 351

⁶ Claim 11 explicitly requires this. Claim 1 requires that the front wheels turn greater than 90 degrees, a prerequisite for zero-degree turns.

(directing the reader to “Section XI.B,” i.e., ¶¶ 217–221), ¶¶ 217–221 (not discussing the speed feature of Hoch, but rather the mower deck).

Accordingly, we are left with essentially no explanation of how the teachings of Hoch are to be applied to the proposed Irikura-Barnes combination. As Patent Owner points out, it is not a trivial modification, because the speed control of Barnes and Irikura operate with independent hydrostatic drives, whereas the speed control of Hoch simply acts on both rear wheels. Prelim. Resp. 70 (citing Ex. 1005, 5:9–12). In other words, the rather simple design of Hoch is not as applicable to the more complicated systems of Irikura or Barnes. For example, in zero-degree turns, one drive is going forward and another in reverse. Thus, reducing the reverse speed here may have unintended consequences. Petitioner does not offer any evidence or technical explanation as to whether the changes required to incorporate the speed feature of Hoch can be applied to the steering and control systems of Irikura as modified by the Barnes control in an obvious manner.

In light of the above, we are not persuaded that Petitioner has shown a reasonable likelihood of success with respect to the Irikura-Barnes-Hoch ground.

III. ORDER

It is hereby ORDERED that the Petition is denied and that no trial is instituted.

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Patent 9,254,865

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