



HERBERT SMITH
FREEHILLS
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PTAB Oral Argument

Godbersen-Smith Construction Co. d/b/a Gomaco Corp.

v.

Guntert & Zimmerman Const. Div., Inc.

August 20, 2025

Case No.: PGR2024-00026

Patent No.: 11,772,723

Kramer Levin is now HSF Kramer

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

PGR2024-00026 ('723) – Instituted Grounds

Ground	Challenged Claims	35 U.S.C. §	References
I	1-7	103	CIII, Rio, Files
II	6	103	CIII, Rio, Files, Tax
III	1-7	112(a)	Written Description

Summary of the Arguments

- The Challenged Claims are patentable because:
 - under 35 U.S.C. § 112 the specification provides written description support for an “angular position transducer disposed on the modular frame or swing leg;”
 - they are ineligible for PGR Under AIA § 3(n)(1)(A) since the claims find written description support from the originally filed pre-AIA application; and
 - they are ineligible for PGR Under AIA § 3(n)(1)(B) since the Board found the '571 Patent's effective filing date is before March 16, 2013.
- The Challenged Claims are not obvious because:
 - they are directed to the on-the-fly steering embodiments;
 - neither CIII or Rio suggest on the fly steering of a slipform paver under load;
 - Petitioner's argument relies upon hindsight and uninformative state-of-the-art references;
 - neither CIII or Rio disclose the “rotatably coupled” and “slew gear drive secured at a lower end” limitation
 - Tax's half century old crane disclosure does not have a swing leg assembly; and
 - strong objective indicia evidence of long-felt need, industry praise and skepticism, copying, and commercial success support patentability.

Overview of the '723 Patent

 US011772723B2	
(12) United States Patent Guntert, Jr. et al.	(10) Patent No.: US 11,772,723 B2 (45) Date of Patent: Oct. 3, 2023
(54) AUTOMATICALLY ADJUSTING SWING LEGS FOR MOUNTING AND ALIGNING AND REORIENTING CRAWLERS	(58) Field of Classification Search CPC B62D 7/06; B62D 11/001; B62D 11/003; B62D 11/005; B62D 11/20; B62D 55/065; B62D 55/084; E01C 19/4853 See application file for complete search history.
(71) Applicant: Guntert & Zimmerman Const. Div., Inc.	(56) References Cited U.S. PATENT DOCUMENTS 6,692,185 B2 * 2/2004 Colvard B62D 11/20 180/9:5 8,459,898 B2 * 6/2013 Guntert, Jr. E01C 19/42 404/85 (Continued)
(72) Inventors: Ronald M. Guntert, Jr. , Stockton, CA (US); Gerald L. Dahlinger , Ripon, CA (US); Richard Wood Francis , Stockton, CA (US)	(74) Attorney, Agent, or Firm — Kilpatrick Townsend & Stockton LLP
(73) Assignee: GUNTERT & ZIMMERMAN CONST. DIV., INC. , Ripon, CA (US)	(57) ABSTRACT A paving machine including a modular frame, a plurality of swing legs pivotable relative to the frame, a jacking column secured to each swing leg, a crawler track, a slew gear drive, and angular position transducers for measuring an angular position between the swing leg and the modular frame, and an angular position of the crawler track relative to the jacking column. Feedback from the transducers facilitates maintaining position of the crawler track. The jacking column can include telescoping outer and inner tubes, a vertically oriented hydraulic actuator including a cylinder and a piston operable within the outer and inner tubes, and spaced apart axial bearings coupled to the outer tube and/or the inner tube. The slew gear drive can be secured between the inner tube and a yoke and capable of steering the crawler track under load without lifting the crawler track.
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.	(21) Appl. No.: 17/884,483 (22) Filed: Aug. 9, 2022 (65) Prior Publication Data US 2023/0074450 A1 Mar. 9, 2023 Related U.S. Application Data (63) Continuation of application No. 16/820,449, filed on Mar. 16, 2020, now Pat. No. 11,535,318, which is a (Continued) (51) Int. Cl. B62D 11/20 (2006.01) B62D 55/084 (2006.01) (Continued) (52) U.S. Cl. CPC B62D 55/084 (2013.01); B62D 7/06 (2013.01); B62D 11/003 (2013.01); B62D 11/20 (2013.01); B62D 11/20 (2013.01); (Continued)
7 Claims, 18 Drawing Sheets	
	

A novel paving machine that relocates its swing leg and/or crawler track **on-the-fly**

A closed loop feedback system of angular position transducers coordinate the operation of the:

- Swing leg hydraulic actuator; &
- Slew drive

'723 Patent at 6:43-54

Overview of the '723 Patent

Each paving machine has a plurality of swing legs mounted to a modular frame via a hinge bracket.

Each swing leg has:

- a jacking column;
- a crawler track coupled to a yoke;
- a slew drive secured to the lower end of the jacking column and the top of the yoke; and
- angular position transducers for measuring the angular position of both the swing leg and the yoke of the crawler track

'723 Patent, Claim 1

What is claimed is:

1. A paving machine comprising:

a modular frame;

a plurality of swing legs, each swing leg coupled to a surface of the modular frame via a hinged bracket and hydraulically actuated to pivot the swing leg about a vertical axis, wherein a first angular position transducer is disposed on the modular frame or the swing leg to measure an angular position between the swing leg and the modular frame and further emit a first signal indicative of the measured angular position to an onboard computer or processor;

a jacking column secured to each swing leg, the jacking column comprising:

telescoping outer and inner tubes with an upright axis, a vertically oriented hydraulic actuator located along the upright axis, the hydraulic actuator comprising a cylinder and a piston operable within the outer and inner tubes, and

spaced apart axial bearings coupled to the outer tube and/or the inner tube; and

a crawler track coupled to a yoke which is rotatably coupled to the jacking column;

a slew gear drive secured at a lower end of the inner tube and to a top of the yoke to translate relative rotational movements between the jacking column and the crawler track about the upright axis, wherein the slew gear drive is capable of steering the crawler track under load without lifting the crawler track; and

a second angular position transducer configured to measure an angular position of the crawler track and yoke relative to the jacking column and further emit a second signal indicative of the measured angular position via a lead to an onboard computer or processor.

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DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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Overview of the '723 Patent

Claim 4

Claims steering with the slew drive while under load

4. The paving machine of claim 1, wherein the slew gear drive is configured to steer and/or maintain the crawler track in a preset position under load.

Claim 6

Claims relocation of jacking column and crawler track while moving under load

6. The paving machine of claim 1, wherein the swing leg is configured to relocate the jacking column with the crawler track while moving and under load.

Claim 7

Claims the feedback loop operation allowing for on-the-fly relocation of the swing leg

7. The paving machine of claim 1, wherein the processor is configured to:
receive the first and second signals;
determine a change of the first angular orientation based on the first signal;
in response to determining the change of the first angular orientation, determine a target second angular orientation based on the determined change of the first angular orientation and the second angular orientation based on the second signal; and
send a control signal to the slew drive in order to cause the second angular orientation of the crawler track to rotate to the target second angular orientation.

The '723 Patent Is Not PGR Eligible

The '723 Patent Is A Pre-AIA Patent

- The Challenged Claims are entitled an effective filing date of no later than March 22, 2011.

See AIA § 3(n)(1)(A)

- Each of the applications in its priority chain, provide written description for an “*angular position transducer... disposed on the modular frame or the swing leg to measure an angular position between the swing leg and the modular frame.*”

P.O. Sur-Reply at §II(A)

The '723 Patent Is PGR Ineligible Under AIA § 3(n)(1)(A)

35 U.S.C. § 100(i)(1) defines the "Effective Filing Date" for a claimed invention in a patent or application for patent to allow two possibilities:

(A) if subparagraph (B) does not apply, **the actual filing date** of the patent or the application for the patent containing a claim to the invention; or

(B) **the filing date of the earliest application for which the patent or application is entitled**, as to such invention, to a right of priority under section 119, 365(a), 365(b), 386(a), or 386(b) or to the benefit of an earlier filing date under section 120, 121, 365(c), or 386(c)

MPEP § 2159.02 focuses on whether the patent application “**as originally filed**, discloses and claims only subject matter also disclosed in an earlier application (filed before March 16, 2013) to which the later filed application is entitled to priority or benefit.”

P.O. Sur-Reply at §II(A)

The '723 Patent Is PGR Ineligible Under AIA § 3(n)(1)(B)

Claim 8 of the '571 Patent was found to have an effective filing date before March 16, 2013, in IPR2021-00135 because it drew written description support in the pre-AIA applications. See Ex. 2001 at 10-12.

Thus, collateral estoppel bars Petitioner's attempt to relitigate this issue because:

1. The issue of effective filing date for the '571 Patent in IPR2021-00135 is the same being raised here;
2. The issue was decided in favor of G&Z;
3. The determination was essential in finding that the Guntert reference is not prior art; and
4. Petitioner does not dispute the fact that it had the opportunity and failed to raise a priority date challenge to Claim 8 of the '571 Patent.

Collateral estoppel cannot possibly attach to the decision in IPR2021-00136 because this issue was not “actually litigated” in that case. P.O. Response at §II

WRITTEN DESCRIPTION

“a first angular position transducer . . . disposed on the modular frame or the swing leg to measure an angular position between the swing leg and the modular frame” - Independent Claim 1; Bryden Decl. ¶64.

A POSITA would know from the description of an “angular position transducer[] at the pivot connection” between the frame and the swing leg that the transducer is disposed on either the frame or swing leg. ’723 Patent, 6:22-23.

Petitioner’s expert confirmed this understanding when addressing Rio’s “pivot” connection, testifying that a “POSITA would have known” where to dispose an angular position transducer depending on the connection design. See Ex. 1002, ¶¶114-115

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Expert Declaration of William Singhose

115. If the pivot pin is designed to rotate with the swing arm, a POSITA would have known to dispose Rio’s pivot sensor 83 on its frame and measure the relative angular movement about the pivot pin. [Ex. 1006 (Rio), 6:19-26.] If instead the pivot pin is designed to be rotationally fixed to the frame and allow the swing arm to rotate around it, a POSITA would have known to dispose Rio’s pivot sensor 83 on its swing arm and measure the relative angular movement about the pivot pin. [Ex. 1006 (Rio), 6:19-26.]

To facilitate the required realignment of the crawler tracks, another important aspect of the present invention preferably replaces the turnbuckles with hydraulic actuators and provides **angular position transducers at the pivot connection for the swing leg at the hinge bracket** and another such transducer between the jacking column and the crawler track. An onboard computer or other processor receives the outputs from the transducers and generates a signal to pivot the crawler track relative to the associated jacking column to keep the crawler tracks oriented in the paving direction when the angular orientation of the swing leg changes, and also keeps all the crawler tracks’ orientations synchronized. Thus, no matter what the swing leg angle is, the crawler track stays straight ahead in the paving direction and position. Of course it is also possible to override this computerized feature so the crawler track orientation can be changed relative to the bolster swing leg, which may be required from time to time for width change, maneuvering on site, etc.

WRITTEN DESCRIPTION

Because the angular position transducer is “disposed on” either the frame or swing leg through the intervening hinge bracket’s “pivot connection,” a construction covering indirect contact further confirms written description support. P.O. Sur-Reply at §III; Ex. 2005

Petitioner does not dispute that the term “disposed on” encompasses indirect contact. Reply at 6.

Declaration of Kenneth “Mark” Bryden
PGR2024-00026 (U.S. Patent No. 11,772,723)

66. In accordance with this well-known principle, the ’723 Patent discloses placing an “angular position transducer[] at the pivot connection for the swing leg at the hinge bracket.” *Id.* at 6:18-24. The hinge bracket is “in a fixed position relative to the bolster and the swing leg,” and the bolster is part of the frame. *Id.* at 9:40-47. The ’723 Patent does not specify which *part* of the pivot connection the transducer must be placed on, and it was well understood that an angular position transducer could be disposed on *either* component to measure the relative angle between them. *Id.* at 6:17-18.

Claim Construction

“A Crawler Track Coupled to a Yoke Which is Rotatably Coupled to the Jacking Column”

&

“a Slew Gear Drive Secured at a Lower End of the Inner Tube and to a Top of the Yoke to Translate Relative Rotational Movements Between the Jacking Column and the Crawler Track About the Upright Axis”

Claim Construction

Terms	G&Z Construction	Gomaco Construction
<p>“a crawler track coupled to a yoke which is rotatably coupled to the jacking column”</p> <p>“a Slew Gear Drive Secured at a Lower End of the Inner Tube and to a Top of the Yoke to Translate Relative Rotational Movements Between the Jacking Column and the Crawler Track About the Upright Axis”</p>	<p>one side of the slew drive is coupled to the jacking column, one side of the slew drive is coupled to the crawler track, and neither cylinder of the jacking column rotates along with the crawler track.</p> <p>P.O. Response at §VI; Bryden Decl., ¶¶28-31.</p>	<p>Petitioner does not dispute G&Z’s proposed construction</p>

Claim Construction

Unlike in the '749 IPR, the '723 Patent requires a slew drive that rotatably couples the crawler track to the jacking column such that it rotates the crawler track relative to the entire jacking column.

P.O. Response at 17-19.

a crawler track coupled to a yoke which is rotatably coupled to the jacking column;
a slew gear drive secured at a lower end of the inner tube and to a top of the yoke to translate relative rotational movements between the jacking column and the crawler track about the upright axis, wherein the slew gear drive is capable of steering the crawler track under load without lifting the crawler track; and



Overview of the Prior Art

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

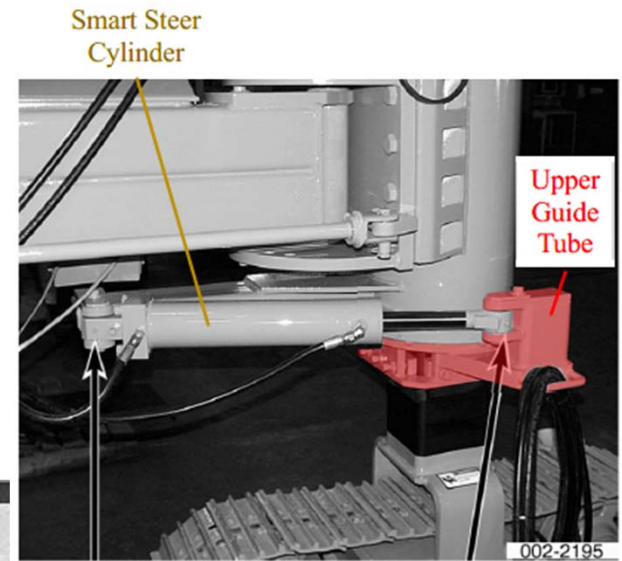
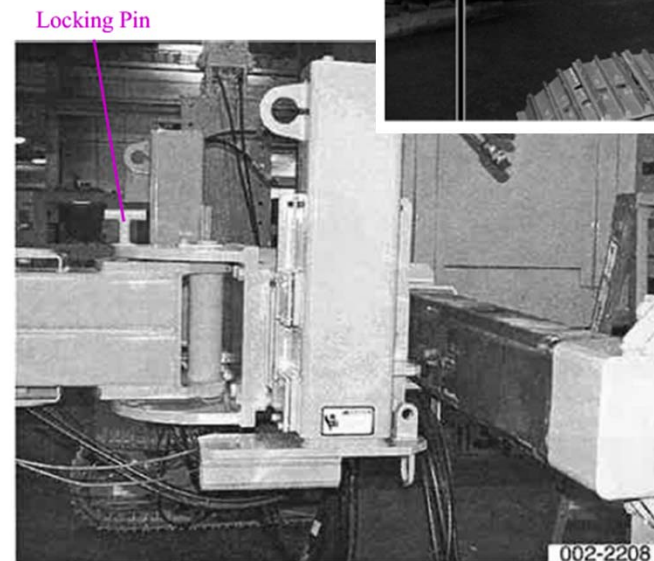
CIII

CIII is a **traditional paving machine** that implements the conventional swing leg/crawler track relocation process.

P.O. Response, 15-16; Pet. 14, 16-17

CIII's swing leg has locking pins that hold the swing leg in place while under load.

The pins are only removed after the machine is supported, the crawler track is lifted off the ground, and the hydraulic pivot cylinder is engaged to pivot the swing leg



Rio

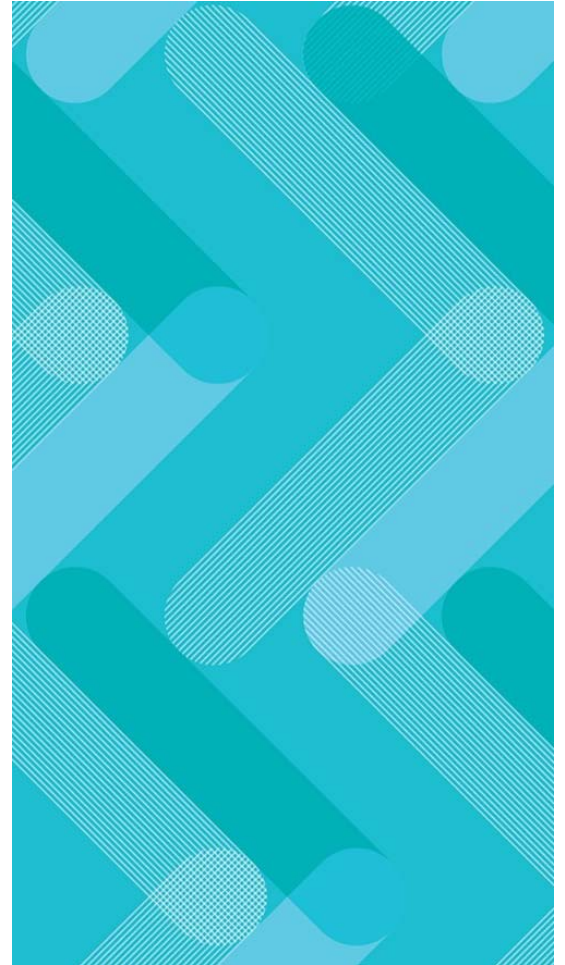
Rio's road milling machine ***must stop and raise its crawler track*** before adjusting its swing leg.

Rio, 7:62-8:27; P.O. Response, 16.

Rio's “**anti-swing actuator**” prevents the swing leg from moving while operating under load and is only released when “the machine is safely stopped.” Rio, 6:27-35

Next, the operator engages the pivot switch which sends a pivot switch command **112** to the controller **32**, commanding that the one ground engaging unit **20** move from the projecting position to the retracted position. In response to receiving the permissive signals indicating that the machine is safely stopped, the recess cover is open, and the one ground engaging unit **20** is suitably elevated, the controller **32** activates the anti-swing actuator **85** and the anti-rotate actuator **98** to release the corresponding protrusions **86, 102** from engagement with the respective receptacles **88, 96**. Alternatively, these locking devices could be released by separate operator controlled switches or even manually, but automatic release is provided for the convenience of the operator.

Petitioner's Obviousness Case Fails



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner's Obviousness Case Fails

The Prior Art Does Not Disclose or Suggest On-the-Fly Steering of a Slipform Paver Under Load

- Independent Claim 1 is Directed to the On-the-Fly Steering Embodiments
- The CIII-Rio Combination Does Not Reach the On-the-Fly Steering Embodiments without the benefit of hindsight
- Petitioner's State-of-the-Art Evidence Does Not Inform a POSITA to rotatably couple a crawler track to a fixed jacking column with a slew drive

The CIII-Rio Combinations Do Not Render Obvious the “Crawler Track Coupled to a Yoke which is Rotatably Coupled to the Jacking Column” and the “Slew Gear Drive Secured at a Lower End” Claim Limitations

The Prior Art Does Not Disclose or Suggest On-the-Fly Steering of a Slipform Paver Under Load

Claim 1 is Directed to the On-the-Fly Steering.

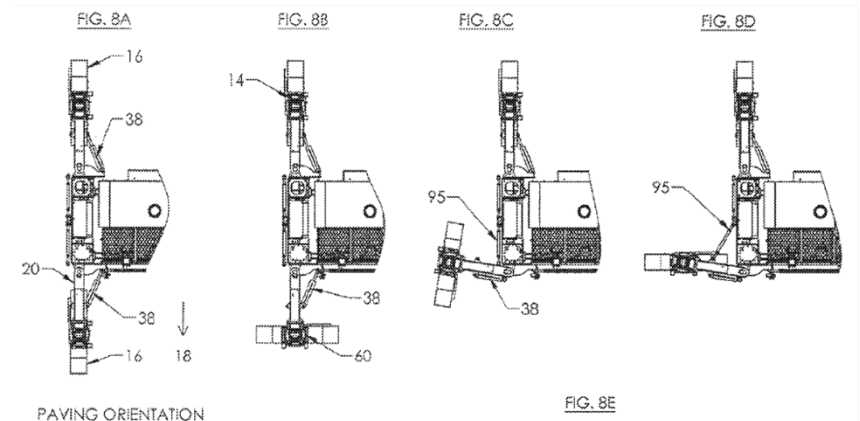
P.O. Sur-Reply at 8-11.

Claim 7's processor's feedback loop calculations provide enlightenment on the coordinated adjustment while the swing leg/track are moving and under load. '723 Patent, Claims 1,7.

Claim 6 captures the movement of the swing leg while under load, which prompts the processor's feedback loop calculations. '723 Patent, Claim 6.

The plain meaning of “swing leg configured to relocate the crawler track” requires that the swing leg itself be “designed . . . to accomplish the specified objective” of relocating the crawler track, not the crawler track alone.

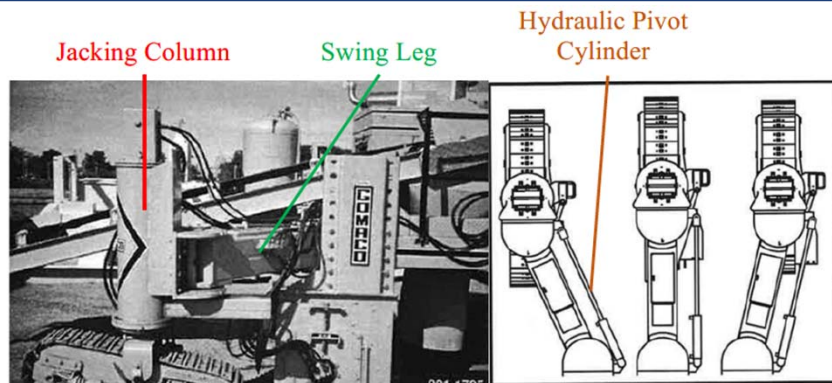
P.O. Sur-Reply at §IV(A)(1)



Petitioner's Argument is the Product of Hindsight

- In both CIII and Rio, the swing legs are **locked in place while under load** and only allow rotation of the swing leg while stopped. P.O. Response at 35, 37; P.O. Sur-Reply at §III; Pet. at 16

CIII



Id., 79-80 (annotated). To swing the leg, an operator raises the crawler track off the ground with the jacking column, removes the pin locking the leg in place, and holds a switch to extend or retract the pivot cylinder until the leg reaches the desired position. *Id.*

Rio

The automatic rotation of Rio's swing leg only occurs when (1) the machine is stopped; (2) the swing leg is lifted off the ground; and (3) the anti-swing device is disengaged. Rio, 7:62-8:27

ing position to the retracted position. In response to receiving the permissive signals indicating that the machine is safely stopped, the recess cover is open, and the one ground engaging unit 20 is suitably elevated, the controller 32 activates the anti-swing actuator 85 and the anti-rotate actuator 98 to release the corresponding protrusions 86, 102 from engagement with the respective receptacles 88, 96. Alternatively,

Petitioner's Argument is the Product of Hindsight

Petitioner's suggestion to move CIII-Rio's locked swing leg under load is not found in the Petition. *See Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 70 F.4th 1331, 1347 (Fed. Cir. 2023)

The '723 Patent distinguishes the claimed invention from embodiments that employ locking mechanisms to keep the crawler track oriented in the right direction.

Compare '723 Patent, 6:47-51 with id. 6:51-54.

a fixed, preset angle. If the swing leg migrates away from a preset angle, the swing leg hydraulic cylinder is actuated to maintain the preset angle and at the same time the necessary adjustments to the crawler track orientation are made with the hydraulic rotary power drive or steering cylinder. Alternatively, a hydraulic system using a locking valve can be provided instead of the position transducer and feedback loop for holding the swing leg in the desired position.

CIII-Rio Combinations Do Not Render Obvious the “Crawler Track Coupled to a Yoke which is Rotatably Coupled to the Jacking Column” and the “Slew Gear Drive Secured at a Lower End” Claim Limitations

- CIII-Rio combination does not teach a “crawler track coupled to a yoke which is rotatably coupled to the jacking column” and the “slew gear drive secured at a lower end.” P.O. Response at §VII(A); P.O. Sur-Reply at §IV(B)

Collateral Estoppel Does Not Apply as the Board in the '749 IPR adopted a much broader construction of the term, which required only that the power drive be “**physically between**” the jacking column and crawler track.

The Board never specified (1) which if any components were coupled to each other and (2) which components rotate with respect to which components.

Petitioner's State-of-the-Art Evidence Does Not Inform a POSITA on How CII's Paver as Modified Would Work

- No state-of-the-art reference suggest rotatably coupling a crawler track to a fixed jacking column to achieve the coordinated adjustment of the swing leg/track while moving and under load. P.O. Response at §VII(A)(3)(a)
- Littman, Johns, and Skotnikov disclose light work vehicles without a swing leg assemblies (inclusive of a swing leg, jacking column, and a crawler track), let alone the coordinated adjustment of a paver's swing leg and crawler track under load.
- Miller's steering housing 122 connects to the machine frame's walking beam, not the inner tube of the jacking column.

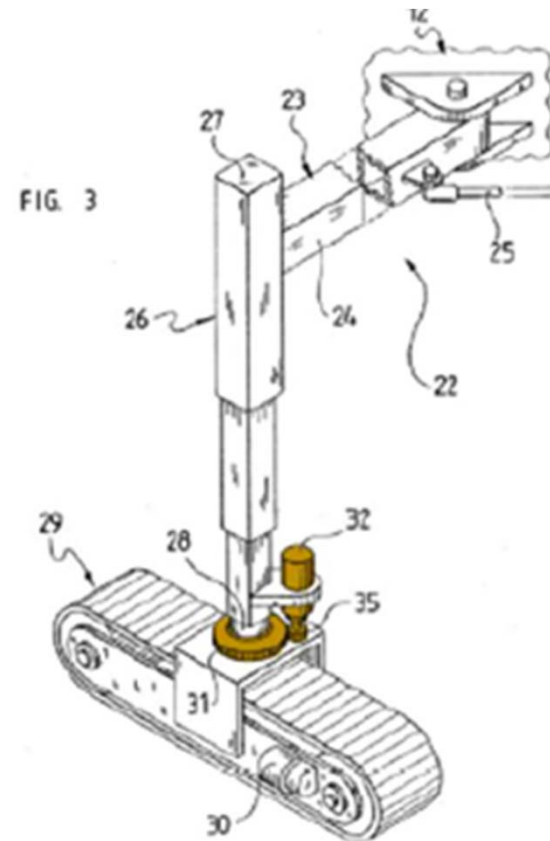
State-of-the-Art does not cure CIII-Rio deficiencies

Whitaker does not disclose a slew drive rotationally coupled to the jacking column and crawler track as claimed, nor would it inform a POSITA to rotationally couple a slew drive to a rotationally fixed jacking column.

P.O. Sur-Reply at §IV(B)

Whitaker's "slew drive" components 32 and 35 point to a ring and pinion gear, not a slew drive.
Whitaker, 4:1-16 and Claim 13

13. Apparatus as described in claim 11 wherein said pivoting means for each tracked conveyor comprises:
- (a) a ring gear affixed to each tracked conveyor and rotatively mounted to said lower end of said telescopic shaft; and
 - (b) a steering motor mounted to said telescoping shaft and having a pinion gear operatively connected to said ring gear.

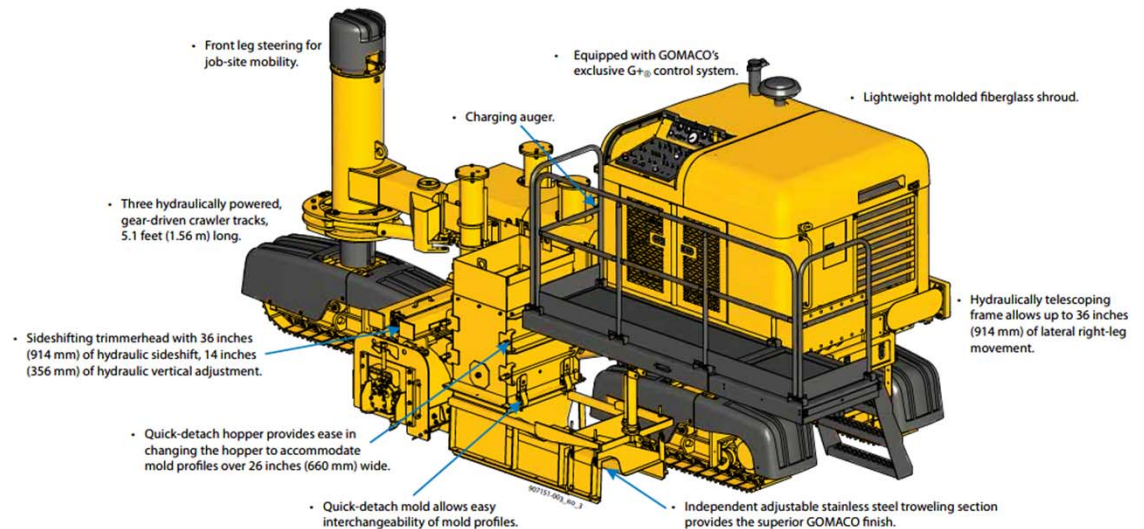


State-of-the-Art does not cure CII-Rio deficiencies

GT-3200 had a Helac rotary actuator **inside** the jacking column.

Gomaco **abandoned** this design for the GT-3200 altogether and rejected the idea of using it on its pavers because it was impracticable to make the jacking columns large enough to contain a rotary actuator strong enough for the application.

P.O. Sur-Reply at §IV(B); Ex. 2037 at 4, 7.



FRONT STEERING ONLY SYSTEM

Type: The front track only, with a hydraulic steering cylinder.

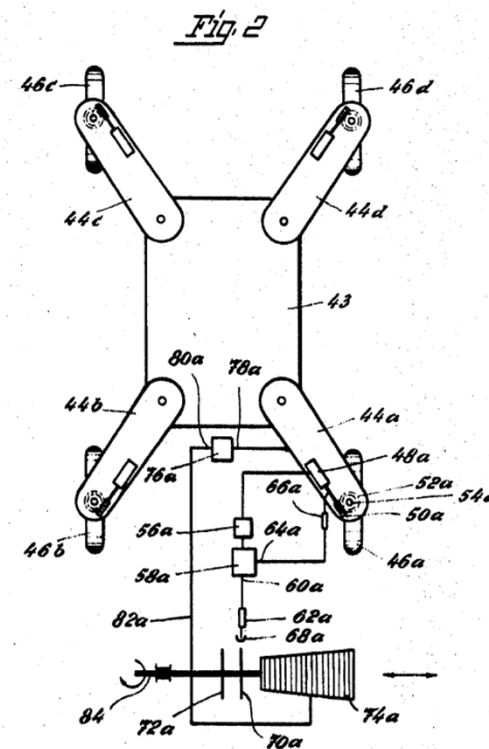
THE CHALLENGED CLAIMS ARE PATENTABLE OVER CIII, RIO, FILES, AND TAX

Tax is a decades old crane disclosure.

Tax does not include a swing leg assembly.

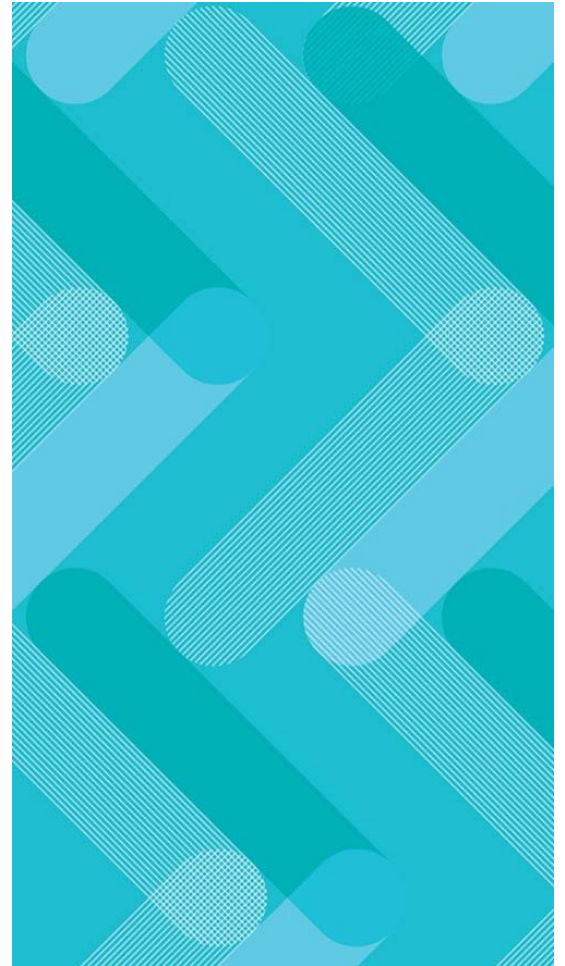
Industry players at the time of the invention confirm that Tax's crane would not have informed a POSITA on how to relocate a paver machine's swing leg/track.

Ex. 2007 at 1; P.O. Response at 38-39; P.O. Sur-Reply at §IV(B).





OBJECTIVE INDICIA EVIDENCE CONFIRM THE NONOBVIOUSNESS OF ON-THE-FLY PAVER ADJUSTMENTS



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Nexus

The requisite nexus exists because the *unique characteristics* of G&Z's on-the-fly embodiments that provided “a new, market-making, commercially successful product that provided significant benefits over prior art devices, received praise in the art, and was copied by competitors.”

Medtronic, 70 F.4th at 1337-38; P.O. Response at §X(A). .

The S600 is equipped with G&Z's new and patented **AccuSteer: Slew Drive Track Control**. The **AccuSteer** slew drives are mounted on top of the track yokes and are used to steer the tracks. The **AccuSteer** drives are powered with hourglass worm technology to give long life, high accuracy and extremely high maneuverability. The hourglass worm engages multiple teeth on the pitch line of the ring gear from the hourglass thread. This engagement gives enormous strength and power to the gearbox. The **AccuSteer** system allows the operator to independently rotate the tracks almost a full circle, providing exceptional maneuverability on site and rapid swing leg relocation for paving and transport without the need to re-pin steering cylinders.

The S600 is also available with G&Z's new and patented **SmartLeg: Swing Leg System** takes on the fly track line adjustments to the next level. Working in tandem with the **AccuSteer** system, The **SmartLeg System** allows the operator to adjust the swing leg angle on the fly while automatically keeping the track straight ahead. This offers a high level of flexibility for the contractor to maneuver around track line obstacles (e.g. fire hydrants, airport runway lights, etc.) on the fly and without stopping to make a bolster adjustment.

With the new SmartLeg System, the process for transforming the S600 into the transport or side barrier wall position can be automated. The simple process dramatically saves time over other conventional slipform pavers. Using the combination of the 90 degree steering mode and the SmartLeg feature, the four swing bolsters and crawler tracks are automatically walked into the outboard, transport position in approx. 30 minutes. In this transport configuration, the S600 can easily walk and steer onto a standard 8' wide trailer. There is no switching of hoses required on the crawler tracks.

Decade Long Need for On-the-Fly Paver Adjustments

Petitioner conceded that the need for more maneuverable pavers was known at least as far back as the **early 2000s** when the change was made to rehab highways.

- Fed. Cir. held that a **6-year** need was long felt. *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1178 (Fed. Cir. 1993)

'749 IPR, Paper 76 (Oral Arg.) at 98:3-19; Ex. 2023, ¶ 4; P.O. Response at §X(B); P.O. Sur-Reply at §VI(B).

4. However, beginning in the early 2000s, road construction jobs started turning to rehabbing highways, which entails repaving small sections of highway with countless number obstacles, such as electric poles, traffic, signs, and barriers. Unlike paving new highway, which requires minimal repositioning of the slipform paver's swing legs and crawler tracks, rehabbing highways demands constant repositioning from one mode to another, *e.g.*, from paving mode to transport mode, as well as maneuver around these obstacles. As such, the conventional slipform paver I mentioned above was not well equipped for this type of job given that its swing legs and crawler tracks have to be manually repositioned by workers, which was not only labor intensive but also extremely time consuming.

Industry Skepticism Existed on Whether the Use of a Slew Gear Drive Was a Workable Solution

- G&Z's S600's unique steering application had industry experts worried or doubtful of whether G&Z's claimed solution would work for driving and steering a paver while under load. P.O. Response at §X(C); P.O. Sur-Reply at §VI(C).
 - Kinematics was **worried** whether their slew gear drive (a twin drive unit) would provide the torque. Ex. 2007 at 1; Ex. 2024 at 4.
 - G&Z's VP of engineering was **doubtful** of G&Z's claimed solution. Ex. 2024 at 4

Industry Praise for G&Z's On-the-Fly Paver Adjustments

Mr. Greenwood expressed that G&Z's claimed solution "was a revolutionary change to the conventional slipform paver" and that it "was a license to print money." Ex. 2022 at ¶¶6-7

Mr. Holley referred to G&Z's claimed solution as a "**game changer**." Ex. 2023 at ¶7

P.O. Response at §X(E); P.O. Sur-Reply at §VI(D). .

7. G&Z's SmartLeg / AccuSteer technology significantly reduced the time it took to reposition the slipform paver from one mode to another, as the technology allows an operator to automatically readjust the positions of the swing legs and rotate the crawler tracks to 90 degree steering position to walk the slipform paver from one paving location to another. This revolutionary change was a license to print money.

7. Purchasing G&Z's slipform pavers with SmartLeg / AccuSteer technology was a game changer, as it dramatically decreased the number of workers required and time spent on repositioning the swing legs and crawler tracks. Specifically, the technology reduced the number of workers from roughly six down to two—just the operator and the supervisor—that are needed to reposition the slipform paver. With the SmartLeg / AccuSteer technology, an

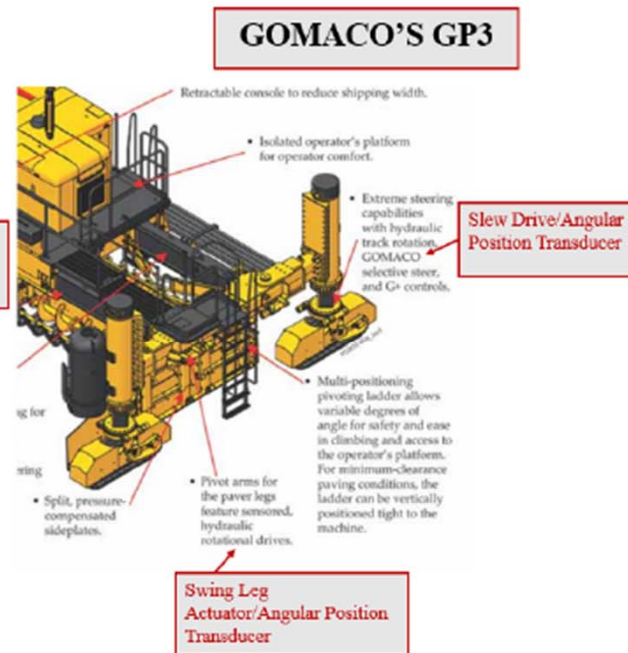
Copying

“[A]ccess to a patented product combined with substantial similarity to the patent product” demonstrates copying. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010)

- Gomaco had undisputed access to the G&Z's S600 Machine at ConExpo 2011.
P.O. Response at §X(D); P.O. Sur-Reply at §VI(E).



Copying - GP3 is substantially similar to G&Z's S600



The GP3 copies G&Z's S600 with SmartLeg / AccuSteer technology, down to its marketing material.

P.O. Response at §X(D);
P.O. Sur-Reply at §VI(E).

Copying - GP3 is substantially similar to G&Z's S600



G&Z S600 Paver Introduced 2010

All photos in this and the next three slides come from Ex. 2040
(<https://www.youtube.com/watch?v=wEtMOGdBqbl> and
<https://www.youtube.com/watch?v=zXDWqokctxw>)

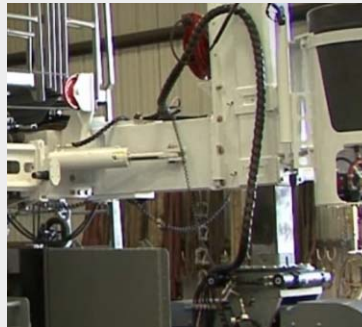


Gomaco GP3 Paver Introduced 2015

All photos in this and the next three slides come from Ex. 2046
<https://www.youtube.com/watch?v=RUBWqWR9fNo>

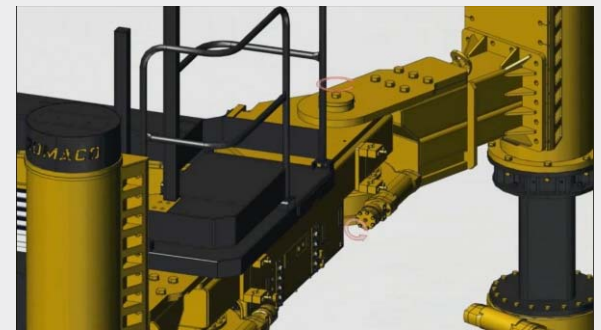
Copying – GP3 is substantially similar to G&Z's S600

G&Z S600 2010



“SmartLeg”

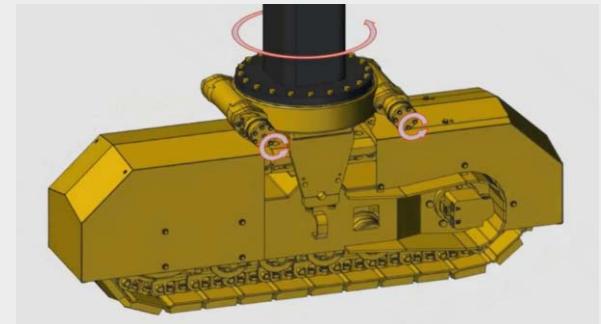
GOMACO GP3 2015



“SmartLeg” Positioning



“AccuSteer” Slew Drive Steering



“Extreme” Slew Drive Steering

Smart Leg and Jacking Columns With Slew Drives Reposition Crawler Tracks “On the Fly” and Under Load From any Swing Leg Position

Ex. 2040 (<https://www.youtube.com/watch?v=wEtMOGdBqbl>);
<https://www.youtube.com/watch?v=zXDWqokctw>;
Ex. 2046 (<https://www.youtube.com/watch?v=RUbWqWR9fNo>)
[HSFKRAMER.COM](https://www.hsfkramer.com)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

// 36

Copying – GP3 is substantially similar to G&Z's S600

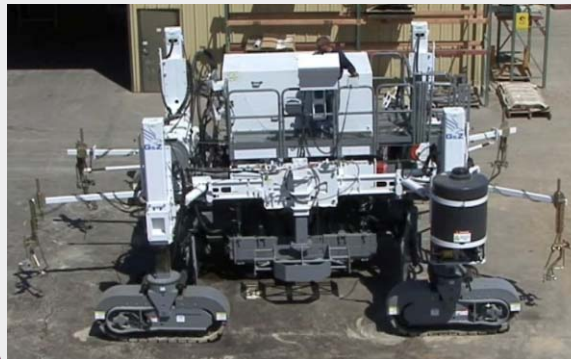
With Smart Legs and Slew Drives Counterrotation and 90 Degree / Transverse Steering Is Possible from Any Swing Leg Position

Ex. 2040 (<https://www.youtube.com/watch?v=wEtMOGdBqbl>);
<https://www.youtube.com/watch?v=zXDWqokctxw>;
Ex. 2046 (<https://www.youtube.com/watch?v=RUbWqWR9fNo>)

G&Z S600 2010



Counterrotation



90 Degree Steering

GOMACO GP3 2015



Counterrotation



Transverse Steering

Copying – GP3 is substantially similar to G&Z's S600

Legs Walked Into Outboard Position

With Smart Legs and Slew Drives using the 90 Degree Steering Mode Jacking Columns and Crawler Tracks are Walked into Transport Position Under Load

Machine Transformed and Shown in Transport Mode

Ex. 2040 (<https://www.youtube.com/watch?v=wEtMOGdBqbl>);
<https://www.youtube.com/watch?v=zXDWqokctxw>;

Ex. 2046 (<https://www.youtube.com/watch?v=RUbWqWR9fNo>)

G&Z S600 2010



GOMACO GP3 2015



Copying

- Evidence shows GOMACO tried and failed to find a solution to this problem before copying G&Z's design. P.O. Response at §X(D); P.O. Sur-Reply at §VI(E).
- The GP3's use of a hydraulic rotary actuator for its swing leg is not a "substantial" difference to the S600 hydraulic cylinder because both components were known and provide the same functionality.

"Smart Leg":

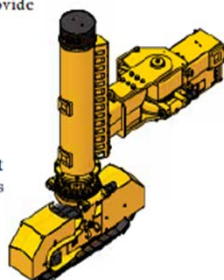
Smart Leg Positioning

Pivot arms for the paver legs feature sensed, hydraulic rotational drives. These Smart Pivots provide the G+ controls with information on the angle of rotation, which coupled with the track rotation sensors, maintain the tracks in the straight-ahead line for steering.

Smart Track Steering

Track steering and rotation is accomplished with sensed, hydraulic rotational drives. This Smart Track Rotation provides the G+ controls with exact track location and position. Extreme steering is now possible with the tracks having the ability to steer farther than ever before.

Smart Leg Pivoting and Smart Track Rotation now lets the G+ system automatically control the direction and speed of each individual track as it travels through a radius.



SMARTLEG SWING LEG SYSTEM



▲ The SmartLeg system in tandem with AccuSteer allows the swing leg angle to be adjusted on-the-fly to maneuver around an obstacle while automatically keeping the crawler track straight ahead.

ACCUSTEER SLEW DRIVE TRACK CONTROL



▲ The AccuSteer system offers unparalleled maneuverability and accuracy allowing synchronized steering in 90 degree mode in every swing leg position.

Commercial Success

- Evidence shows G&Z lost significant market share when Gomaco released the GP3 in 2015, while Gomaco's market share rose. P.O. Response at §X(F); P.O. Sur-Reply at §VI(F).
 - Gomaco does not dispute the accuracy of the relied upon market share analysis.
 - Gomaco's argument regarding Wirtgen's competition effecting G&Z's sales supports the success of G&Z's technology as Wirtgen also copied the S600.
 - Gomaco's reliance upon COVID supply chain delays effecting S600's delivery was after G&Z's market share already declined.