

## PATENT ASSIGNMENT COVER SHEET

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 Stylesheet Version v1.2

EPAS ID: PAT6009702

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
TERRANCE J. AARNIO	04/26/2016
KEITH CHAPMAN	04/26/2016
BILL CRITTENDON	04/26/2016
THOMAS J. HICKMAN	05/05/2016
ODED MAMAN	05/13/2016
DANIEL MILLER	05/05/2016
CHRISTOPHER PALMER	04/26/2016
PERRY ROYLAND	04/26/2016
VERN TAUTE	04/26/2016
DAVID WARD	04/26/2016
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	VIGOR INDUSTRIAL LLC
<b>Street Address:</b>	5555 N. CHANNEL AVE.
<b>City:</b>	PORTLAND
<b>State/Country:</b>	OREGON
<b>Postal Code:</b>	97217
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16815773
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(503)595-5301
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	5035955300
<b>Email:</b>	athena.bubenik-hartley@klarquist.com
<b>Correspondent Name:</b>	KLARQUIST SPARKMAN, LLP
<b>Address Line 1:</b>	ONE WORLD TRADE CENTER
<b>Address Line 2:</b>	121 SW SALMON ST., SUITE 1600
<b>Address Line 4:</b>	PORTLAND, OREGON 97204
<b>ATTORNEY DOCKET NUMBER:</b>	9557-96500-05

PATENT

<b>NAME OF SUBMITTER:</b>	BRANDON J. JOHNSON
<b>SIGNATURE:</b>	/Brandon J. Johnson/
<b>DATE SIGNED:</b>	03/11/2020
<b>Total Attachments: 13</b> source=96500-05 Assignment#page1.tif source=96500-05 Assignment#page2.tif source=96500-05 Assignment#page3.tif source=96500-05 Assignment#page4.tif source=96500-05 Assignment#page5.tif source=96500-05 Assignment#page6.tif source=96500-05 Assignment#page7.tif source=96500-05 Assignment#page8.tif source=96500-05 Assignment#page9.tif source=96500-05 Assignment#page10.tif source=96500-05 Assignment#page11.tif source=96500-05 Assignment#page12.tif source=96500-05 Assignment#page13.tif	

## ASSIGNMENT

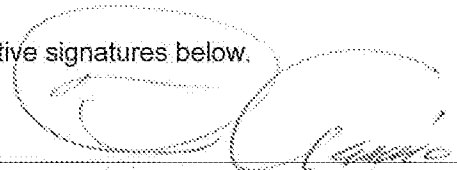
WHEREAS, if and to the extent that we were inventors, we, Terrance J. Aarnio of Milwaukie, Oregon; Keith Chapman of Milwaukie, Oregon; Bill Crittendon of Estacada, Oregon; Thomas J. Hickman of Canby, Oregon; Oded Maman of Portland, Oregon; Daniel Miller of Estacada, Oregon; Christopher Palmer of McMinnville, Oregon; Perry Royland of Tigard, Oregon; Vern Taute of Gaston, Oregon; and David Ward of Eagle Creek, Oregon; and have invented a certain invention entitled Method of Making and Using Orthotropic Decks as described at least in part in EXHIBIT A, and/or in any related currently filed or to be filed patent application (the titled invention, the invention as described in Exhibit A, and any patent applications filed or to be filed in the future related to the Method of Making and Using Orthotropic Decks, all collectively referred to herein as "the Invention"), and

WHEREAS, Vigor Industrial LLC, a company organized under the laws of the State of Oregon, having a place of business at 5555 N. Channel Ave., Portland, Oregon 97217, desires to acquire an interest therein:

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, we, Terrance J. Aarnio, Keith Chapman, Bill Crittendon, Thomas J. Hickman, Oded Maman, Daniel Miller, Christopher Palmer, Perry Royland, Vern Taute, and David Ward, hereby sell, assign, and transfer to Vigor Industrial LLC, any and all right, title, and interest we may have in and to the Invention, patent application, and patent rights throughout the world, including foreign patent priority rights, the right to file and prosecute International Applications under the Patent Cooperation Treaty, and the right to file and prosecute applications under the European Patent Convention; the Invention, patent application, and letters patent in this or any foreign country, and all corresponding non-provisional applications, divisions, continuations, continuations-in-part, reissues, and extensions thereof, to be held and enjoyed by Vigor Industrial LLC, for its own use and benefit, and for its successors and assigns to the full end of the term for which letters patent may be granted by the United States or any foreign country, as fully and entirely as the same would have been held by us had this assignment and sale not been made, and agree that we will communicate to Vigor Industrial LLC, or its successors and assigns, any facts known to us respecting the Invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing, and reissue applications, make all rightful oaths, and do everything possible to aid Vigor Industrial LLC, its successors, and assigns to obtain and enforce proper patent protection for said invention in the United States or any foreign country.

We hereby grant the law firm of Klarquist Sparkman, LLP, the power to insert on this Assignment any further information that may be necessary or desirable in order to comply with all applicable legal requirements, including the rules of the United States Patent and Trademark Office, for submitting and recording this document.

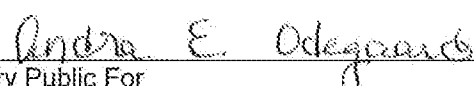
Executed at the place and date opposite our respective signatures below.

  
Terrance J. Aarnio

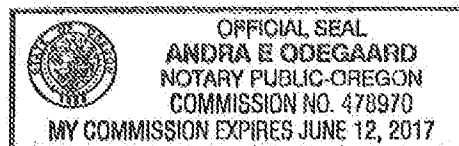
At Clackamas, Oregon  
(City and State)  
on this 26<sup>th</sup> day of April, 2016.

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 26<sup>th</sup> day of April, 2016, before me personally came the above-name Terrance J. Aarnio, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Terrance J. Aarnio's own free will for the purpose set forth therein.

  
Notary Public For  
My commission expires: June 12, 2017

[SEAL]



Keith Chapman  
Keith Chapman

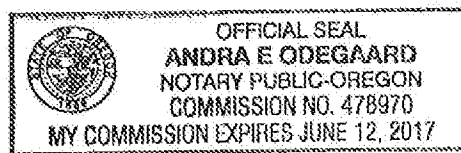
At Clackamas, Oregon  
(City and State)  
on this 26 day of April, 2016.

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 26<sup>th</sup> day of April, 2016, before me personally came the above-named Keith Chapman, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Keith Chapman's own free will for the purpose set forth therein.

Andra E. Odegaard  
Notary Public For  
My commission expires: June 12, 2017

[SEAL]



Bill Crittendon  
Bill Crittendon

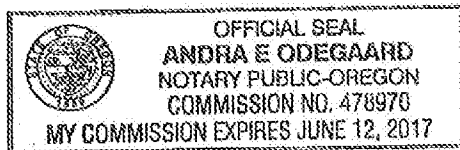
At Clackamas Oregon  
(City and State)  
on this 26<sup>th</sup> day of April, 2016

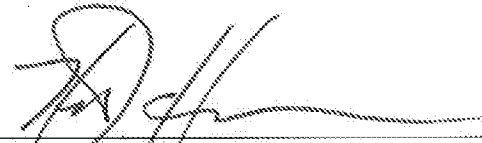
STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 26<sup>th</sup> day of April, 2016, before me personally came the above-named Bill Crittendon, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Bill Crittendon's own free will for the purpose set forth therein.

Andra E. Odegard  
Notary Public For  
My commission expires: June 12, 2017

[SEAL]

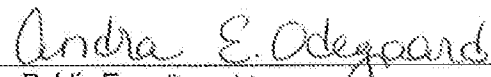


  
Thomas J. Hickman

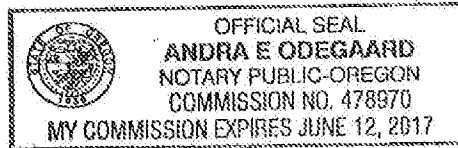
At Clackamas, OR  
(City and State)  
on this 5<sup>th</sup> day of May, 2016.

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 5<sup>th</sup> day of May, 2016, before me personally came the above-named Thomas J. Hickman, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Thomas J. Hickman's own free will for the purpose set forth therein.

  
Notary Public For Oregon  
My commission expires: June 12, 2017

[SEAL]



At Clackamas OR  
(City and State)  
on this 13 day of May, 2016.

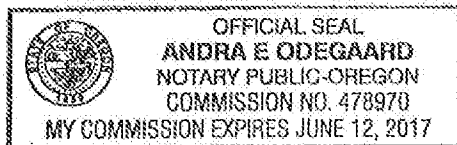
Oded Maman

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 13<sup>th</sup> day of May, 2016, before me personally came the above-named Oded Maman, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Oded Maman's own free will for the purpose set forth therein.

Andra E. Odegaard  
Notary Public For Oregon  
My commission expires: June 12, 2017

[SEAL]





Daniel Miller  
Daniel Miller

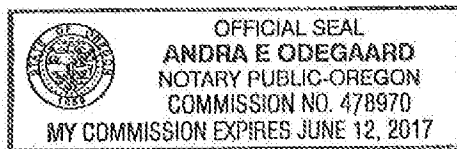
At Clackamas, OR  
(City and State)  
on this 5<sup>th</sup> day of May, 2016.

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 5<sup>th</sup> day of May, 2016, before me personally came the above-named Dan Miller, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Dan Miller's own free will for the purpose set forth therein.

Andra E. Odegaard  
Notary Public For Oregon  
My commission expires:  
June 12, 2017

[SEAL]





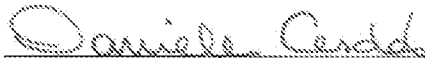
Christopher Palmer

At Portland, Oregon  
(City and State)

on this 26<sup>th</sup> day of April, 2016.

STATE OF )  
COUNTY OF ) ss.

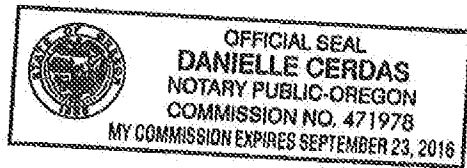
This 26<sup>th</sup> day of April, 2016, before me personally came the above-named Chris Palmer, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Chris Palmer's own free will for the purpose set forth therein.



Notary Public For

My commission expires: September 23, 2016

[SEAL]

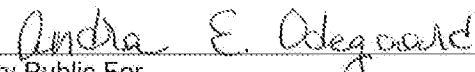


  
Perry Royland

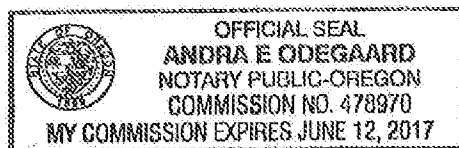
At Clackamas, Oregon  
(City and State)  
on this 26<sup>th</sup> day of April, 2016.

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 26<sup>th</sup> day of April, 2016, before me personally came the above-named Perry Royland, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Perry Royland's own free will for the purpose set forth therein.

  
Notary Public For  
My commission expires: June 12, 2017

[SEAL]



*Vern Taute*

Vern Taute

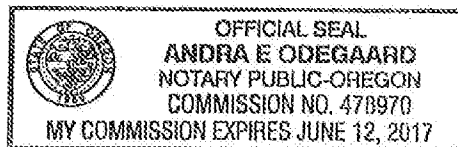
At Clackamas, Oregon  
(City and State)  
on this 26<sup>th</sup> day of April, 2016.

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 26<sup>th</sup> day of April, 2016, before me personally came the above-named Vern Taute, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by Vern Taute's own free will for the purpose set forth therein.

*Andra E. Odegaard*  
Notary Public For  
My commission expires: June 12, 2017

[SEAL]



*[Signature]*  
David Ward

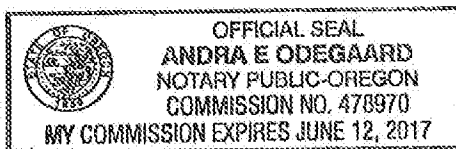
At Clackamas, Oregon  
(City and State)  
on this 26 day of April, 2016.

STATE OF Oregon )  
COUNTY OF Clackamas ) ss.

This 26<sup>th</sup> day of April, 2016, before me personally came the above-named David Ward, who executed the foregoing instrument in my presence, and who acknowledged to me that this instrument was executed by David Ward's own free will for the purpose set forth therein.

Andra E. Odegaard  
Notary Public For  
My commission expires: June 12, 2017

[SEAL]



## EXHIBIT A

The invention entitled Method of Making and Using Orthotropic Decks referred to in the Assignment and described at least in part herein comprises orthotropic decks, including devices (e.g., fixtures, welding equipment, machining tools), methods, and/or processes for fabricating, using, and/or transporting such orthotropic decks. For example, the invention comprises in some embodiments one or more of the following:

1. Welding ribs (in some embodiments being U-shaped, V-shaped, or trapezoidal) to a deck plate, including one or more of the following:
  - a. Beveling edges of ribs for weld joint preparation;
  - b. Using specially made equipment, which is considered a part of the Invention, to machine the bevel on the edges of ribs after the ribs have been formed; and/or
  - c. Attaching ribs to a deck plate, including one or more of the following:
    - i. Attaching the ribs to the deck plate after the deck plate has been cambered, both longitudinally and widthwise;
    - ii. Using multiple rib fitting fixtures to hold the ribs in place at a location where each floorbeam will be (i.e., there is one fixture for each floorbeam location); and/or
    - iii. Using robotic welders to weld the ribs to the deck plate.
2. Attaching floorbeams to ribs and deck plate, including one or more of the following:
  - a. Cutting of floorbeams, including one or more of the following:
    - i. Using laser tracking to create a precise profile of the ribs/deck plate at the exact location where each floorbeam will go; and/or
    - ii. Machining a custom floorbeam for each location by using the profile measurements and/or a CNC machine.
  - b. Welding the floorbeams to the ribs and deck plate, including one or more of the following:
    - i. Tack welding the floorbeams in place;
    - ii. Standing the deck panel on edge; and/or
    - iii. Using a robotic welding machine which begins welding at the bottom of the deck plate and continues upwardly to create a continuous single weld.
3. Finishing the deck, including one or more of the following:
  - a. Making the deck panels (including deck plate, ribs and/or floorbeams) longer and wider than specified; and/or
  - b. Machining the edges of the deck panels so that the unit is to specifications.

With such methods we have achieved orthotropic deck manufacture that exceeds specification parameters. For example, the methods can significantly improve tolerances between components (e.g., the ribs and the floorbeams). This, in turn, can significantly improve the weld quality between the components. The methods also improve weld quality by significantly reducing residual stresses in the

welds and by improving the welding direction and uniformity. As a result, the methods can significantly improve the strength and durability of the deck.