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Sent: Thursday, April 18, 2024 09:48
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Subject: [EXT] RE: IPR2023-00539 - Hum Indus. Tech., Inc. v. Amsted Rail Co., Inc.
Attachments: Corrected CLAIMS APPENDIX A(157415235.1)-C.docx

Counsel,

From the Board –

Patent Owner may file the attached Corrected Claims Appendix with its Reply, which is due April 25, 2024.

Regards,

Esther Goldschlager
Supervisory Paralegal Specialist
Patent Trial & Appeal Board
U.S. Patent & Trademark Office

From: Miller, Ryan N. <RMiller@foxrothschild.com>
Sent: Wednesday, April 17, 2024 8:16 AM
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Subject: IPR2023-00539 - Hum Indus. Tech., Inc. v. Amsted Rail Co., Inc.

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IPR2023-00539

Your honors:

Patent Owner seeks authorization to file the attached Corrected Claim Appendix with its Reply due April 25, 2024 to address clear typographical errors in the Claim Appendix filed with Patent Owner's Revised Motion to Amend. The changes are redlined. Patent Owner believes good cause exists to allow the Corrected Claim Appendix and that no further briefing would be required.

The changes are as follows:

- Limitation 33(d): Deleting the erroneously repeated verbatim phrase "transmitting an alarm if in step (c) it is determined that the temperature of the desired part is outside the acceptable range of

temperatures and" and deleting "condition" from the currently recited "alarm condition" to match antecedent basis for "alarm".

- Limitation 42(d): Deleting "based on the one or more numeric values", a term lacking antecedent basis in claim 42 but which is introduced in claim 43.

Petitioner opposes the request and does not believe good cause exists.

The parties are available for a conference call on Wednesday 9am-1pm ET, Thursday 2pm-5pm ET, and Friday 9am-11am and 2pm-5pm ET.

/ Ryan N. Miller /
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CLAIMS APPENDIX A

Proposed substitute claims are shown in marked-up form below beginning with claim 23. Modifications to the corresponding original claim are shown in the substitute claim by underlining (added material), strikethrough (deleted material), and double bracketing (deleted material).

Claim 23 (Substitute for claim 1, if found unpatentable)

~~1-23.~~ A method of monitoring operational characteristics of a railcar comprising the steps of:

a. receiving data or processed information regarding ~~said~~ an operational characteristic of a railcar from one or more sensing units, each mounted on a sidewall of a bearing adapter on said railcar at the bearing adapter, said sensing units monitoring ~~an~~ said operational characteristic of said railcar, wherein the operational characteristic is a condition of a bearing proximate to the bearing adapter;

b. determining the condition of the bearing by applying a heuristic to said received data to determine deviations from nominal operating conditions, wherein the heuristic correlates one or more numeric values derived from the data or processed information to the condition of the bearing;

c. assigning a severity level to said deviations from nominal operating conditions, wherein said severity level is one of a plurality of defined severity levels that are each assignable based on respective possible values for a magnitude of the deviations of one or more numeric values from nominal operating conditions for the bearing during operation of the railcar; and

d. determining an alarm condition based on said assigned severity level, wherein said alarm condition defines one or more recommended actions to be taken with regard to the detected deviation from nominal operating conditions.

Claim 24 (Substitute for claim 13, if found unpatentable)

~~13.24.~~ The method of ~~claim 1~~ claim 23, wherein steps (a) through (d) can be carried out at different event engines distributed among at least two of said ~~sensors~~ sensing units, a communication management unit, and a mobile or land base station.

Claim 25 (Substitute for claim 2, if found unpatentable)

~~2.25.~~ The method of ~~claim 1~~ claim 23, further comprising the initial step of establishing wireless communication with said one or more remote sensing units.

Claim 26 (Substitute for claim 3, if found unpatentable)

~~3.26.~~ The method of ~~claim 2~~ claim 25, wherein said one or more remote sensing units form a mesh network.

Claim 27 (Substitute for claim 4, if found unpatentable)

~~4.27.~~ The method of ~~claim 2~~ claim 25, wherein the received data or processed information includes one or more numeric values based on data obtained by an accelerometer in said sensing unit at the bearing adapter and wherein steps a-d are executed by a processing unit located on said railcar.

Claim 28 (Substitute for claim 5, if found unpatentable)

~~5.28.~~ The method of ~~claim 4~~ claim 27, wherein said processing unit located on said railcar is a part of ~~said~~ a mesh network.

Claim 29 (Substitute for claim 6, if found unpatentable)

~~6.29.~~ The method of ~~claim 2~~claim 25, further comprising the step of transmitting said alarm condition to a location remote from said railcar.

Claim 30 (Substitute for claim 7, if found unpatentable)

~~7.30.~~ The method of ~~claim 2~~claim 25, further comprising the step of transmitting said data or processed information received from said one or more sensing units to a location remote from said railcar and performing steps b-d at said location remote from said railcar, wherein said data or processed information received from said one or more sensing units includes one or more numeric values based on data obtained by an accelerometer in said sensing unit at the bearing adapter.

Claim 31 (Substitute for claim 8, if found unpatentable)

~~8.31.~~ The method of ~~claim 2~~claim 25, further comprising the steps of:

- a. receiving acceleration data from a plurality of railcars;
- b. applying ~~a~~the heuristic to said received acceleration data to determine the deviations from nominal operating conditions;
- c. assigning ~~a~~the severity level to said deviations from nominal operating conditions;
- d. determining ~~an~~ the alarm condition based on said assigned severity level;
and
- e. transmitting ~~said a~~ a raised alarm to a display unit on a train of which said plurality of railcars are a part, said raised alarm comprising the specific action to be taken with regard to the bearing based on the assigned severity level.

Claim 32 (Substitute for claim 9, if found unpatentable)

9.32. The method of ~~claim 6~~claim 29, further comprising the steps of

a. determining a recommended course of action based on said alarm condition; and

b. transmitting said recommended course of action to a display unit on a train of which said railcar is a part.

Claim 33 (Substitute for claim 10, if found unpatentable)

10.33. A method of monitoring a temperature of a desired part of a railcar, comprising:

(a) sensing the temperature of a part of the railcar other than the desired part by use of a temperature sensor in thermal communication with said other part;

(b) determining the temperature of the desired part by use of the temperature of the part sensed in step (a) and calibrated correlations between a plurality of temperature values for the desired part and a plurality of temperatures that are expected for the part during standard operations of the railcar;

(c) determining if said temperature of the desired part is outside an acceptable range of temperatures indicating operating conditions expected for the desired part during the operation of the railcar by comparing the temperature of the desired part determined in step (b) and at least one defined temperature value associated with the desired part, wherein an acceptable range of temperatures is a defined range of temperatures expected during normal operation of the railcar; and

(d) transmitting an alarm if in step (c) it is determined that the temperature of the desired part is outside ~~an~~ the acceptable range of temperatures and

~~transmitting an alarm if in step (c) it is determined that the temperature of the desired part is outside the acceptable range of temperatures and~~ is within one of a plurality of severity levels defined by a deviation of said temperature from a predetermined reference temperature value, wherein said deviation indicates a

severity of a detected condition of the desired part, wherein said alarm ~~condition~~ defines one or more recommended actions to be taken with regard to the detected condition of the desired part.

Claim 34 (Substitute for claim 11, if found unpatentable)

~~11.34.~~ A method of monitoring a temperature and condition of a desired part of a railcar in accordance with ~~claim 10~~ claim 33, further comprising the step of determining ~~a~~ the temperature of the ambient air, which temperature is used in the determination of step (b).

Claim 35 (Substitute for claim 12, if found unpatentable)

~~12.35.~~ A method of monitoring a temperature and condition of a desired part of a railcar in accordance with ~~claim 10~~ claim 33, wherein steps (a) through (d) are carried out by a single unit attached to said railcar.

Claim 36 (Substitute for claim 14, if found unpatentable)

~~14.36.~~ A method for monitoring the operation of a railcar performed by a communication management unit disposed on said railcar comprising the steps of:

a. wirelessly receiving data from one or more sensing units which periodically collect readings from one or more sensors disposed on a sidewall of a bearing adapter on said railcar;

b. heuristically analyzing said received data to:

(i) determine a condition of a bearing proximate to the bearing adapter based on correlations between the data and a plurality of possible values indicative of the condition of the bearing;

(ii) determine if an actual failure exists on said railcar or to predict potential or imminent failures based on a statistical analysis of said received data; and

(iii) assign a severity level to said determined actual failure or said predicted potential or imminent failures, wherein the severity level is based on deviations of the condition of the bearing from an expected condition of the bearing; and

c. determine an alarm condition based on data collected by the one or more sensing units, wherein said alarm condition defines a specific action to be taken with regard to the bearing based on said assigned severity level;

ed. communicating the results of said analysis performed in step (b) to an off-railcar location.

Claim 37 (Substitute for claim 15, if found unpatentable)

~~15-37.~~ The method of ~~claim 14~~claim 36, wherein each of said sensing units can make a said determination of an alarm condition based on data collected by the sensing unit, said method further comprising ~~the step of:~~

~~a. wirelessly receiving notice of said alarm condition from said sensing unit;~~
~~and~~

~~b. communicating said alarm condition to an off-railcar location.~~

Claim 38 (Substitute for claim 16, if found unpatentable)

~~16-38.~~ The method of ~~claim 14~~claim 36, further comprising the steps of:

a. making a said determination of an alarm condition based on data received from two or more of said sensing units; and

b. communicating said alarm condition to an off-railcar location.

Claim 39 (Substitute for claim 17, if found unpatentable)

~~17.39.~~ The method of ~~claim 14~~claim 36, further comprising the step of placing said one or more sensing units in a stand-by state when said one or more sensing units is not reading data from any of said sensors or transmitting data.

Claim 40 (Substitute for claim 18, if found unpatentable)

~~18.40.~~ The method of ~~claim 14~~claim 36, further comprising the step of joining a mesh network consisting of one or more sensing units located on said railcar.

Claim 41 (Substitute for claim 20, if found unpatentable)

~~20.41.~~ The ~~system~~method of ~~claim 14~~claim 36, further comprising the steps of:

- a. saving data received from said one or more sensing units in memory; and
- b. comparing data received with said saved data to identify trends or deviations from normal readings of said data stored in memory.

Claim 42 (Substitute for claim 21, if found unpatentable)

~~21.42.~~ A method for monitoring the operation of a railcar comprising:

- a. collecting data at periodic intervals about one or more operating parameters of said railcar using one or more sensor units provided on a sidewall of a bearing adapter on said railcar, wherein the one or more operating parameters comprise a condition of a bearing proximate to the bearing adapter;
- b. communicating said collected data to a communication management unit;
- c. analyzing said collected data by applying heuristics thereto to (i) determine if an actual failure exists and (ii) ~~to~~ predict potential or imminent failures based on a statistical analysis of said collected data, wherein application of the heuristics correlates the data to the condition of the bearing;

d. assigning a severity level to the condition of the bearing, wherein said severity level is one of three or more defined severity levels~~based on the one or more numeric values~~; and

e. determining an alarm condition, wherein said alarm condition defines a specific action to be taken with regard to the bearing based on said assigned severity level.

Claim 43 (Substitute for claim 22, if found unpatentable)

~~22.43.~~ The method of ~~claim 21~~claim 42, wherein the collected data includes one or more numeric values based on data obtained at the bearing adapter, further comprising the steps of:

assessing the ~~collected data~~ one or more numeric values to determine if an alarm condition exists; and

wirelessly communicating said alarm condition to an off railcar location.