

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TETRA TECH CANADA INC.,
Petitioner,

v.

GEORGETOWN RAIL EQUIPMENT COMPANY,
Patent Owner.

IPR2019-01581
Patent 8,081,320 B2

Before HUBERT C. LORIN, JENNIFER S. BISK, and
KRISTINA M. KALAN, *Administrative Patent Judges*.

BISK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Determining all Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Tetra Tech Canada Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–17 of U.S. Patent No. 8,081,320 B2 (Ex. 1001, “the ’320 patent”). Paper 1 (“Pet.”). Georgetown Rail Equipment Company (“Patent Owner”), identified as the owner of and real party in interest to the ’320 patent (Paper 5, 2), did not file a Preliminary Response. We instituted this review as to all challenged claims. Paper 6 (“Inst. Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response. Paper 8 (“PO Resp.”). Petitioner filed a Reply. Paper 9 (“Reply”). Patent Owner also filed a Sur-Reply. Paper 11 (“Sur-Reply”). A transcript of the oral hearing held on December 3, 2020, has been entered into the record as Paper 16 (“Tr.”).

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, Petitioner has demonstrated by a preponderance of the evidence that claims 1–17 of the ’320 patent are unpatentable.

A. Related Matters

The parties identify a district court case in which the ’320 patent was previously asserted, but later was withdrawn from the proceeding. Pet. 5; Paper 5, 2. Petitioner adds that related patents, U.S. 7,616,329 (the “’329 patent”) and U.S. 9,441,956 (the “’956 patent”) remain in that proceeding. Pet. 5. In addition, Canadian national stage entries of the ’320 and ’329 patents were the subject of Canadian litigation. Pet. 4. Finally, Petitioner notes that both the ’329 and ’956 patents, as well as related patent U.S. 8,209,145, are the subject of petitions for *inter partes* review. *Id.* at 5 (citing IPR2019-00619, IPR2019-00620, IPR2019-00662, and IPR2019-01409).

B. The '320 Patent

The '320 patent, titled “Tilt Correction System and Method for Rail Seat Abrasion,” issued December 20, 2011. Ex. 1001, codes (45), (54). The '320 patent relates generally to inspecting railroad surfaces. *Id.* at 1:26–29. In particular, the '320 patent addresses the problem of rail seat abrasion, which is wear at the point of a railroad track where the two parallel rails are attached to the crossties. *Id.* at 1:52–59. According to the '320 patent, previous methods of measuring and monitoring this wear “have proved either unreliable, hazardous, labor-intensive, requiring extensive equipment installation, or having a major impact on the availability of railroads to train traffic.” *Id.* at 2:6–12.

In response to these difficulties, the '320 patent describes a railroad inspection vehicle with mounted lasers, cameras, and processors that take precise measurements of the height of the rail and the tie. *Id.* at 2:22–43. The '320 patent then describes “adjusting these measurements for any expected tilt encountered.” *Id.*

The '320 patent describes an example of determining the wear of the rails using image data. Figures 7A and 7B are reproduced below.

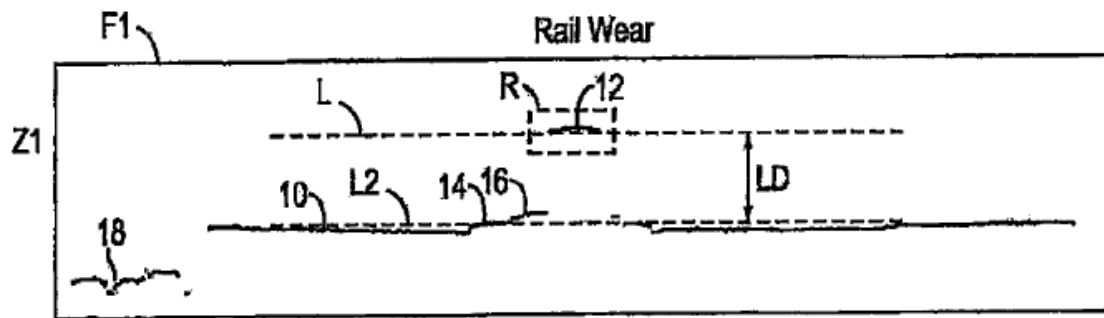


FIG. 7A

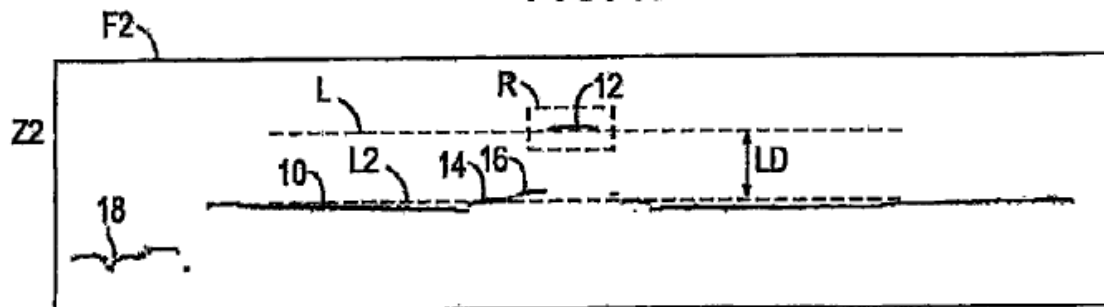


FIG. 7B

Figures 7A and 7B, above, “illustrate example [image data] frames of railroad track obtained with the disclosed inspection system for determining wear of the rail.” *Id.* at 3:4–6. Figure 7A shows frame F1 at position Z1 along the track, and Figure 7B shows frame F2 at position Z2. *Id.* at 9:35–39, 9:43–44, 9:51–52. Each frame shows rail 12 lying within a region of interest R and at level L above reference level L2, which may be the height of a tie plate—measurement LD. *Id.* at 9:43–48. Figure 7B shows that “[a]t position Z2, the distance LD is less between the contour of the rail 12 and level L2 than at position Z1” and “[t]hus, frame F2 may indicate wear of the rail 12 at the position Z2 along the track.” *Id.* at 9:52–55.

Using data such as that shown in Figures 7A and 7B, the '320 patent explains that “rail seat abrasion may be predicted with a high level of accuracy” using “algorithms that adjust for vehicle tilt.” *Id.* at 12:49–53. Vehicle tilt occurs when inspection system 30 moves through curves or

bends in the track resulting in “a suspension lean of the system 30” and “the railroad track itself leaning either to the left or right in the field of the cameras.” *Id.* at 12:53–59. Figure 17 is reproduced below.

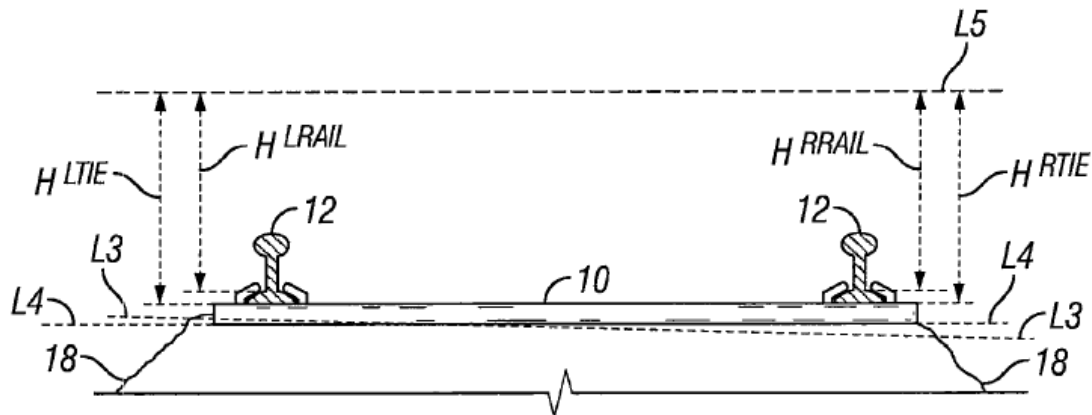


FIG. 17

Figure 17, above, “illustrates a profile image of a rail road track tilted [within a curve] according to an exemplary embodiment of the present invention.” Ex. 1001, 3:27–29. In Figure 17, “left and right rails 12 are illustrated laying atop concrete tie 10.” *Id.* at 12:66–13:1. “Line L3 represents level ground” and line L4 shows the angular tilt of cross ties 10. *Id.* at 13:1–5. To determine whether rail seat abrasion is present, height measurement of each rail is taken, however, a tilt in the camera may cause one rail to appear higher than another. For example, in Figure 17, because the track is tilting slightly to the left, “the height of right rail 12 would appear taller than left rail 12, resulting in skewed data measurements.” *Id.* at 13:5–10. The ’320 patent states that empirical and mathematical research has determined that a standard tilt correction factor of 0.12 is incorporated into algorithms to adjust for tilt. *Id.* at 13:11–17. Figure 18, “a flow chart illustrating a method of determining rail seat abrasion,” is reproduced below. *Id.* at 3:30–32.

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