

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES-BENZ USA, LLC,
Petitioner,

v.

CARUCEL INVESTMENTS, L.P.,
Patent Owner.

IPR2019-01442
Patent 7,848,701 B2

Before THOMAS L. GIANNETTI, DANIEL J. GALLIGAN, and
PAUL J. KORNICZKY, *Administrative Patent Judges*.

GIANNETTI, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

Mercedes-Benz USA, LLC (“Petitioner” or “Mercedes-Benz”) filed a Petition requesting *inter partes* review of claims 10, 15–18, 31, and 33–35 (the “challenged claims”) of U.S. Patent No. 7,848,701 B2 (Ex. 1001, the “’701 patent”). Paper 2 (“Pet.”). Carucel Investments, L.P. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

Pursuant to 35 U.S.C. § 314, we instituted this *inter partes* review as to all of the claims challenged and all grounds raised in the Petition. Paper 8 (“Institution Dec.”).

Following institution, Patent Owner filed a Response. Paper 12 (“PO Resp.”). Subsequently, Petitioner filed a Reply to Patent Owner’s Response (Paper 21, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 27, “PO Sur-reply”).

On December 2, 2020, we held a consolidated oral hearing with several related cases involving Patent Owner. A transcript of the hearing is included in the record. Paper 30 (“Hearing Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision, issued pursuant to 35 U.S.C. § 318(a). For the reasons we discuss below, we determine that Petitioner has proven by a preponderance of the evidence that claims (the “challenged claims”) of the ’701 patent are unpatentable.

B. Related Proceedings

The parties identify the following pending district court proceedings involving the ’701 patent: *Carucel Investments, LP v. Fiat Chrysler Automobiles US LLC, et al.*, 3:18-cv-03331 (N.D. Tex.); *Carucel Investments, LP v. General Motors Company*, 3:18-cv-03332 (N.D. Tex.);

IPR2019-01442
Patent 7,848,701 B2

Carucel Investments, LP v. Volkswagen Group of America, Inc., 3:18-cv-03333 (N.D. Tex.); *Carucel Investments, LP v. Mercedes-Benz USA, et al.*, 3:18-cv-03334 (N.D. Tex.). Paper 4; Pet. 74.

In addition to this Petition, the '701 patent was also challenged by a different party (Volkswagen Group of America, Inc.) in IPR2019-01102. Pet. 60; Paper 4.

Patents related to the '701 patent are challenged in IPR2019-01101, IPR2019-01103, IPR2019-01104, IPR2019-01079, IPR2019-01298, IPR2019-01404, IPR2019-01105, IPR2019-01440, and IPR2019-01441. Pet. 60–61; Paper 4.

C. Real Parties-in-Interest

Petitioner identifies “Daimler AG, Daimler North America Corporation, Mercedes-Benz USA, LLC and Mercedes-Benz U.S. International, Inc.” as the real parties-in-interest. Pet. 60. Patent Owner identifies Carucel Investments, L.P., as the real party-in-interest. Paper 4, 1.

D. The '701 Patent

The '701 patent is titled “Mobile Communication System with Moving Base Station.” Ex. 1001, (54). According to the patent, “[a] problem with existing mobile telephone systems is the considerable time required in handoffs. This becomes a particular problem in urban areas which are highly congested.” *Id.* at 1:54–56. The '701 patent addresses this problem by providing “a moving base station which is interposed between a moving mobile telephone unit and a fixed base station.” *Id.* at 2:65–3:1. The “movable base station moves with the traffic at a rate of speed which is comparable to the speed of the traffic and communicates with a moving mobile telephone unit via standard mobile radio transmission.” *Id.* at 3:2–5. The movable base station “communicates by radio signals with a plurality of

fixed antennas spaced along the path of travel of the mobile base station.”
Id. at 3:5–8.

This is illustrated by Figure 1 of the '701 patent, reproduced below.

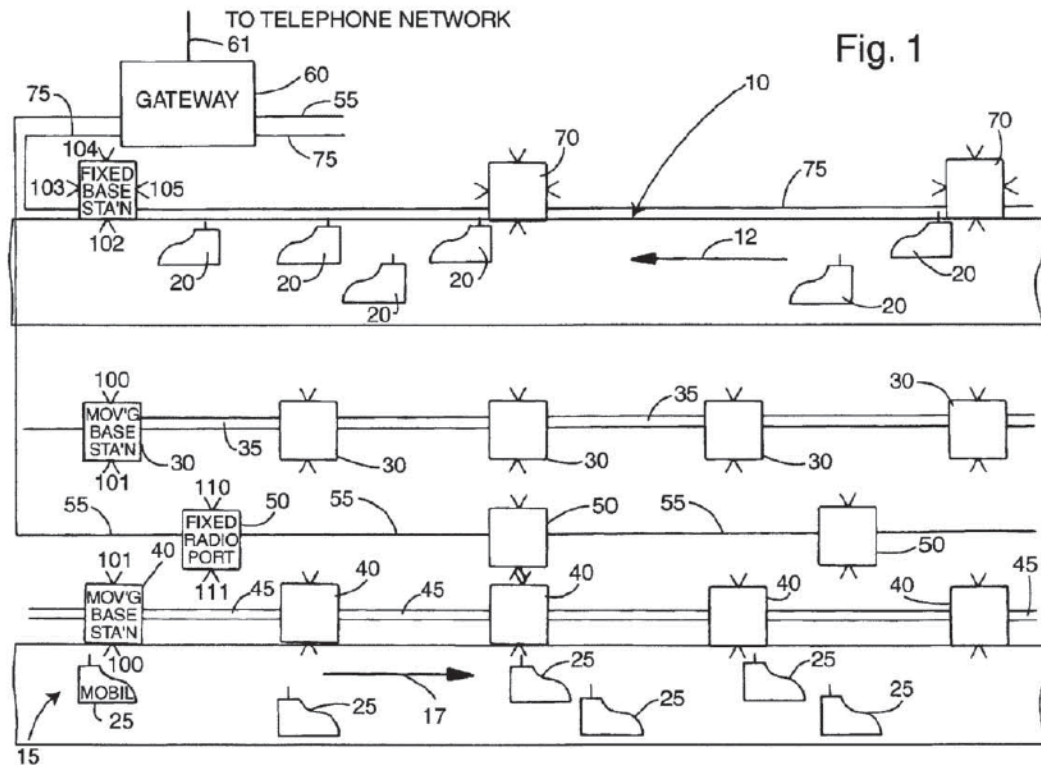


Fig. 1 is a block diagram representation of a roadway structure with fixed base stations, moving base stations, and fixed radio ports. *Id.* at 3:43–45.

In Figure 1, a divided highway has mobile units 20 traveling on first roadway 10, in one direction, and mobile units 25 traveling along second roadway 15, in the opposite direction. *Id.* at 3:65–4:1. Moving base stations 30 are disposed along one side of roadway 10. *Id.* at 4:1–3. The base stations are spaced apart by a selected distance equivalent to the diameter of the cell served by the moving base station. *Id.* at 4:3–5.

Moving base stations 30 may be moved by means of rail 35 or other suitable conveying device, which may include an automotive vehicle traveling on the roadway, in the same direction as the traffic flow on

roadway 10, as indicated by arrow 12. *Id.* at 4:5–9. Similarly, moving base stations 40 are disposed along adjacent roadway 15, moving in the direction of the traffic as indicated by arrow 17. *Id.* at 4:9–12. Moving base stations 40 are moved along rail 45. *Id.* at 4:12.

In operation, base stations 30 move in the direction of the flow of the traffic at a rate of, for example, sixty miles per hour, which may be faster than some traffic and slower than other traffic. *Id.* at 4:41–44. The moving base stations handle telecommunications with mobile units 25, which travel at a rate of not more than thirty miles per hour faster or slower than the moving base stations. *Id.* at 4:37–40. Fixed base stations 70 accommodate communications with mobile units traveling at speeds of less than thirty miles per hour, including pedestrian traffic and stationary units. *Id.* at 4:46–49.

According to the '701 patent, the advantage of this system is reducing the number of handoffs:

The system in accordance with the invention differs from the prior art primarily in that the base stations 30, 40 are moving with the traffic and communicate with the gateway office 60 via fixed radio ports 50. Furthermore, the various call-handling functions, including handoff, are performed by the moving base station.

Advantageously, because of movement of the base station in the same direction as the traveling mobile unit, the number of handoffs is greatly reduced.

Id. at 5:8–16 (emphasis added).

Each of the moving base stations is provided with multiple antennas. *Id.* at 5:17–18. Antennas 100 on moving base stations 30, 40 are used to communicate with mobile units 20, 25, whereas antennas 101 on moving

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