

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FPUSA, LLC,
Petitioner,

v.

M-I LLC,
Patent Owner.

Case IPR2016-00213 (Patent 9,004,288 B2)
Case IPR2016-00295 (Patent 9,074,440 B2)

Before JAMES A. TARTAL, CARL M. DEFRANCO, and
TIMOTHY J. GOODSON, *Administrative Patent Judges*.

GOODSON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

IPR2016-00213 (Patent 9,004,288 B2)
IPR2016-00295 (Patent 9,074,440 B2)

I. INTRODUCTION

FPUSA, LLC (“Petitioner”) filed a Petition in IPR2016-00213 (“213 IPR”) requesting *inter partes* review of claims 1, 3–6, 8–12, and 14–18 of U.S. Patent No. 9,004,288 (“the ’288 patent”). See 213 IPR, Paper 6 (“213 Pet.”). Petitioner also filed a Petition in IPR2016-00295 (“295 IPR”) requesting *inter partes* review of claims 1, 3–6, 8–12, and 14–18 of U.S. Patent No. 9,074,440 (“the ’440 patent”). See 295 IPR, Paper 1 (“295 Pet.”). M-I LLC (“Patent Owner”) did not file a preliminary response in either proceeding. We instituted trial in both proceedings. See 213 IPR, Paper 14 (“213 Dec. on Inst.”); 295 IPR, Paper 9 (“295 Dec. on Inst.”).

After institution of trial, Patent Owner filed a Patent Owner Response in each proceeding. See 213 IPR, Paper 38 (“213 PO Resp.”); 295 IPR, Paper 30 (“295 PO Resp.”). Thereafter, Petitioner filed a Reply in each proceeding. See 213 IPR, Paper 41 (“213 Pet. Reply”); 295 IPR, Paper 33 (“295 Pet. Reply”). The parties presented oral argument in both the 213 IPR and the 295 IPR at a hearing held on April 24, 2017. 213 IPR, Paper 46 (“Tr.”).

We have jurisdiction over these proceedings under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Because of the significant overlap in issues, arguments, and evidence between these proceedings, we address both proceedings in this single Final Written Decision. Unless indicated otherwise, citations to the record in this Decision refer to the papers and exhibits in the 213 IPR.

For the reasons explained below, after consideration of the evidence and arguments of the parties, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 3–6, 8–10, 14, and 15 of the

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'288 patent and claims 1, 3–6, 8–10, and 14–18 of the '440 patent are unpatentable. *See* 35 U.S.C. § 316(e). We further determine that Petitioner has not shown by a preponderance of the evidence that any of claims 11, 12, and 16–18 of the '288 patent or either of claims 11 and 12 of the '440 patent are unpatentable. *See id.*

A. Related Matters

Patent Owner is asserting the '288 and '440 patents against Petitioner in a civil action in the U.S. District Court for the Western District of Texas, *M-I LLC v. FPUSA, LLC*, Case No. 5:15-cv-00406 (DAE) (“Parallel District Court Litigation”). *See* 295 IPR, Ex. 1028. In the Parallel District Court Litigation, the District Court granted M-I’s motion for a preliminary injunction. *See* Ex. 1018. In FPUSA’s appeal of that preliminary injunction ruling, the Federal Circuit affirmed in part, vacated in part, and remanded. *See M-I LLC v. FPUSA, LLC*, 626 Fed. Appx. 995, 996–97 (Fed. Cir. 2015).

B. Summary of the Challenged Patents

1. The '288 Patent

The '288 patent describes a system and method for separating components in a slurry of drilling fluid and drill cuttings using pulse-vacuum assisted screening. Ex. 1001, at [57], 1:17–19.

In the Background section, the '288 patent explains that drilling fluid serves several purposes in oilfield applications, including lubricating drill bits, carrying cuttings away from the drill bit, and preventing blowouts by maintaining hydrostatic pressure within the well. *Id.* at 1:22–25, 31–33, 52–53. The drilling fluid is pumped from the surface downhole to the drill bit, and the spent drilling fluid then returns back to the surface. *Id.* at 1:25–30. The fluid exiting the borehole includes cuttings, which must be removed

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before the fluid can be recycled. *Id.* at 1:59–61. Recycling the drilling fluid is desirable because it is expensive and time consuming to mix, as it must be formulated specifically for the characteristics of the formation being drilled. *Id.* at 1:40–51.

The Background section further explains that a “shale shaker, also known as a vibratory separator,” was a known apparatus for removing cuttings from drilling fluid. *Id.* at 1:62–65. This device included an angled table with a screen bottom, and the slurry is deposited at the top of the incline. *Id.* at 1:65–2:3. The Background explains the operation of known shale shakers as follows:

As the drilling mud travels down the incline toward the lower end, the fluid falls through the perforations to a reservoir below thereby leaving the solid particulate material behind. The combination of the angle of inclination with the vibrating action of the shale shaker table enables the solid particles left behind to flow until they fall off the lower end of the shaker table.

Id. at 2:3–9. A drawback of known shale shakers, according to the ’288 patent, is that the separation of drilling fluid from drill cuttings is often incomplete, necessitating additional equipment and processes to further dry the cuttings and recover drilling fluid. *Id.* at 3:7–15. The ’288 patent seeks to “improve the rate and efficiency at which shakers remove liquid from cuttings or other solids.” *Id.* at 3:23–24.

One additional known system described in the Background of the ’288 patent is a shaker that includes an air pump to develop a vacuum beneath the screens, thereby increasing the flow rate of drilling mud through the screens. *Id.* at 3:30–37. “However, applying a continuous vacuum beneath a screen to draw fluid through the screen may result in solids sticking to the screen.” *Id.* at 3:37–39.

Figures 1 and 2 of the '288 patent are reproduced below:

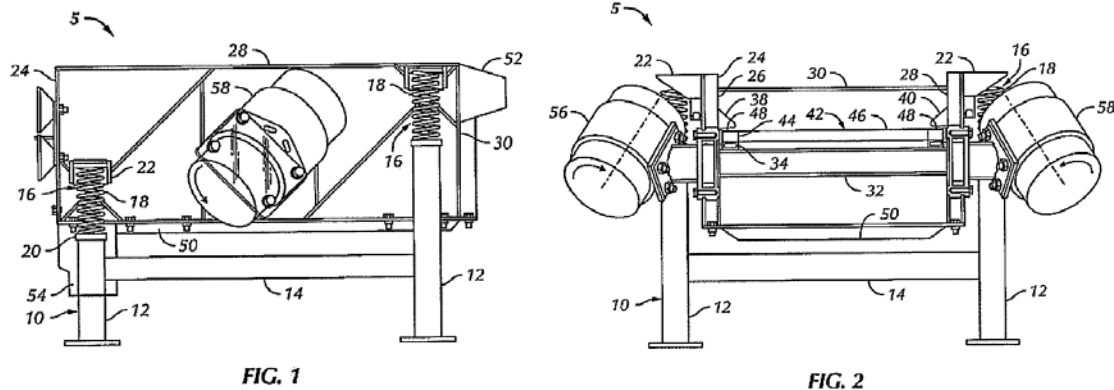


FIG. 1

FIG. 2

Figures 1 and 2 are side and cross-sectional views, respectively, of vibratory screen separator 5. *Id.* at 4:61–64. Separator 5 includes “separator frame or basket 24,” which has sidewalls 26 and 28 and back wall 30. *Id.* at 5:36–38. The separator also includes screen 42 and sump 50 to receive material that passes through screen 42. *Id.* at 5:49–51, 55–56. Inlet 52 is positioned at back wall 30 and outlet 54 receives material from sump 50 for discharge. *Id.* at 5:56–59. Rotary eccentric vibrators 56 and 58 are attached to sidewalls 26 and 28. *Id.* at 5:63–65.

The '288 patent describes that “[a] pressure differential device (not shown) may be provided to create a pressure differential between the vapor space above screen 42 and the vapor space between screen 42 and sump 50.” *Id.* at 6:3–6. The pressure differential may be pulsed or toggled, which avoids solids accumulating or sticking on the screen. *Id.* at 6:34–35, 54–58.

The '288 patent also describes that in some embodiments, the separator may include two or more screens, and “[o]ne or more sumps may be located under the screens such that a pressure differential may be provided across less than all of the two or more shaker screens.” *Id.* at 7:8–13.

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