

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WEATHERFORD INTERNATIONAL, LLC,
WEATHERFORD /LAMB, INC., WEATHERFORD US, LP, and
WEATHERFORD ARTIFICIAL LIFT SYSTEMS, LLC,
Petitioner,

v.

PACKERS PLUS ENERGY SERVICES, INC.,
Patent Owner.

Case IPR2016-01517
Patent 7,134,505 B2

Before SCOTT A. DANIELS, NEIL T. POWELL, and
CARL M. DEFRANCO, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
37 C.F.R. § 42.108

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I. INTRODUCTION

Packers Plus Energy Services Inc. (“Packers Plus”) is the owner of the ’505 patent. Weatherford International, LLC, Weatherford/Lamb, Inc., Weatherford US, LP, and Weatherford Artificial Lift Systems, LLC (“Petitioner”) filed a Petition (Paper 1, “Pet.”) challenging claims 23 and 27 of the ’505 patent. Rapid Completions LLC, the exclusive licensee of the ’505 patent, filed a Preliminary Response (Paper 18, “Prelim. Resp.”). In view of those submissions, we instituted an *inter partes* review of claims 23 and 27 of the ’505 patent. Paper 23 (“Institution Decision” or “Dec. on Inst.”). Subsequent filings include a Patent Owner Response (Papers 32, 33¹, “PO Resp.”), a Petitioner Reply (Paper 39, “Pet. Reply”), and a Patent Owner Surreply (Paper 55, “PO Surreply”).

We have jurisdiction over this proceeding under 35 U.S.C. § 6(b). After considering the evidence and arguments of the parties, we determine that Petitioner has proven by a preponderance of the evidence that claims 23 and 27 of the ’505 patent are unpatentable. *See* 35 U.S.C. § 316(e). We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a).

II. BACKGROUND

A. *The ’505 Patent*

The ’505 patent discloses an apparatus and method for fluid treatment of a wellbore. Ex. 1001, 1:16–19. The ’505 patent discloses that many prior systems required inserting a tubing string into a bore hole “with the ports or perforations already open.” *Id.* at 2:10–12. The ’505 patent states that this

¹ Paper 32 is a private, unredacted version of the Patent Owner Response, and Paper 33 is a public, redacted version of the Patent Owner Response.

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“can hinder the running operation and limit usefulness of the tubing string.”

Id. at 2:15–17. The ’505 patent addresses this problem, disclosing that its “method and apparatus provide for the running in of a fluid treatment string, the fluid treatment string having ports substantially closed against the passage of fluid therethrough, but which are openable when desired to permit fluid flow into the wellbore.” *Id.* at 2:26–31. Regarding applications for its system, the ’505 patent discloses that “[t]he apparatus and methods of the present invention can be used in various borehole conditions including open holes, cased holes, vertical holes, horizontal holes, straight holes or deviated holes.” *Id.* at 2:31–34.

The ’505 patent shows details of a wellbore fluid treatment assembly in Figure 1b. *Id.* at 6:8–9. Figure 1b is reproduced below.

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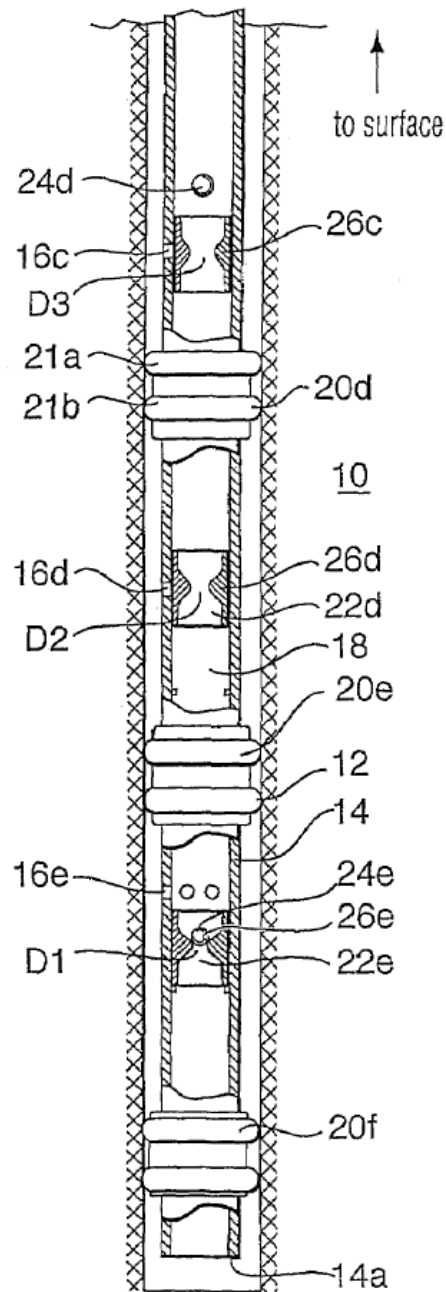


FIG. 1b

Figure 1b shows a wellbore fluid treatment assembly, including tubing string 14 disposed inside wellbore 12 of formation 10. *Id.* at 6:8–12.

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Packers 20d, 20e, and 20f mount at different positions along the axis of tubing string 14. *See id.* at 6:17–19; Fig. 1b. The packers used are solid-body type packers having at least one extrudable packing element. *Id.* at 6:33–34. At ported intervals 16c, 16d, and 16e, ports 17 open through tubing string 14. *Id.* at 6:12–16. Ported interval 16c sits above packer 20d, ported interval 16d sits between packers 20d and 20e, and ported interval 16e sits between packers 20e and 20f. *See id.* at 6:17–19; Fig. 1b.

Sliding sleeves 26c, 26d, and 26e are positioned inside tubing string 14 to regulate opening of ports 17. *Id.* at 6:41–42. Sliding sleeves 26c, 26d, and 26e mount over ports 17 of ported intervals 16c, 16d, and 16e, respectively, to close the ports 17. *See id.* at 6:42–44. Each of sliding sleeves 26c, 26d, and 26e can be moved to a position away from the associated ports 17 to open them. *Id.* at 6:46–53. In one embodiment, a ball or plug may actuate a sliding sleeve from the closed state to an open state. Ball 24e can travel through tubing string 14 and seat in sleeve 22e. *Id.* at 6:65–7:18. For example, ball 24e can travel through tubing string 14 and seat in sliding sleeve 26e. *Id.* at 6:65–7:11. Subsequently, pressure applied inside tubing string 14 can move ball 24e and sliding sleeve 26e to open ports 17 of ported interval 16e, as shown in Figure 1b. *Id.* at 7:2–15. This allows fluid flow between the inside and the outside of tubing string 14 through ports 17. *Id.* at 7:15–18. Other balls can be used to move the other sliding sleeves in sequence, so as to allow sequential treatment of different zones within wellbore 12. *Id.* at 7:66–8:35. To facilitate sequential treatment, the '505 patent discloses that

Each of the plurality of sliding sleeves has a different diameter seat and therefore each accept different sized balls. In

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