

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PACKERS PLUS ENERGY SERVICES INC.,
Petitioner,

v.

BAKER HUGHES OILFIELD OPERATIONS, LLC,
Patent Owner.

Case IPR2016-01003
Patent No. 8,261,761 B2

Before MITCHELL G. WEATHERLY, BEVERLY M. BUNTING, and
ROBERT L. KINDER, *Administrative Patent Judges*.

KINDER, *Administrative Patent Judge*.

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

Packers Plus Energy Services Inc., (“Petitioner”) filed a Petition pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1–20 of U.S. Patent No. 8,261,761 B2 (“the ’761 patent”). Paper 2 (“Pet.”). Baker Hughes Oilfield Operations, LLC (“Patent Owner”) did not file a Preliminary Response in this proceeding. Applying the standard set forth in 35 U.S.C. § 314(a), we instituted an *inter partes* review of all challenged claims. (Paper 10, “Dec.”).

During the trial, Patent Owner filed a Patent Owner Response (Paper 14, “PO Resp.”), and Petitioner filed a Reply to the Patent Owner Response (Paper 18, “Pet. Reply”). We authorized a Patent Owner sur-reply. Paper 23 (PO Sur-reply.).

An oral hearing was held on June 26, 2017, and a copy of the transcript has been made part of the record. Paper 28 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims for which we instituted trial. Based on the record before us, we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 1–20 of the ’761 patent are unpatentable.

I. BACKGROUND

A. *Real Party in Interest*

Petitioner names Packers Plus Energy Services Inc. as the real party in interest. Pet. 3. Patent Owner asserts that “[t]he real parties-in-interest in this proceeding are Baker Hughes Oilfield Operations, LLC; Baker Hughes, a GE Company, LLC; and Baker Hughes, a GE Company.” Paper 31, 1.

B. The '761 patent (Ex. 1001)

The '761 patent is titled “Selectively Movable Seat Arrangement and Method.” Ex. 1001, (12). The '761 patent generally relates to a plugging device that may be used “[i]n industries concerned with earth formation boreholes, such as hydrocarbon recovery and gas sequestration.” *Id.* at 1:6–9. In this industry, plugging is sometimes desirable at multiple locations and the plugging may be sequential or otherwise. *Id.* at 1:9–13. Plugging systems may employ droppable members, such as balls, that engage a ball seat to create a desired plug. *Id.* at 13–17. According to the '761 patent, it was known to use seats with sequentially smaller diameters at locations farther from the surface and to drop balls that have sequentially larger diameters. *Id.* at 1:19–26. Such a configuration allows the ball seat farthest from the surface to be plugged first by a ball with a smaller complementary diameter. *Id.* The '761 patent recognizes that such a system creates increasingly restrictive dimensions within the borehole that can negatively impact flow as well as limit the size of tools that can be run into the borehole. *Id.* at 1:27–32.

To address these identified problems, the '761 patent discloses two different embodiments, each of which provides a ball seat and zone-selective sealing capability, using uniformly sized balls and seat mechanisms. *Id.* (Figs. 1–4 first embodiment and Figs. 5–6 second embodiment). The embodiments disclosed in the '761 patent are designed to avoid the problematic restrictive dimensions inherent in the system, which uses different sized balls. *Id.* at 1:27–32. The restriction engaging system of the '761 patent allows a predetermined number of balls to pass through and, thus, travel downstream to the next restriction engaging system in line

before it forms a closed seat that catches the next ball dropped down the well bore. *Id.* at 3:54–61. The Specification of the '761 patent refers to a “member” or “restriction engager,” which may be a ball, and also to a “seat arrangement or restriction,” which may be a ball seat. *Id.* at 1:36–40, 2:26–32. For example, as depicted in Petitioner’s annotated Figure 1 “restriction engagers 14 pass[] through restriction 18.” *Id.* at 2:45–47.

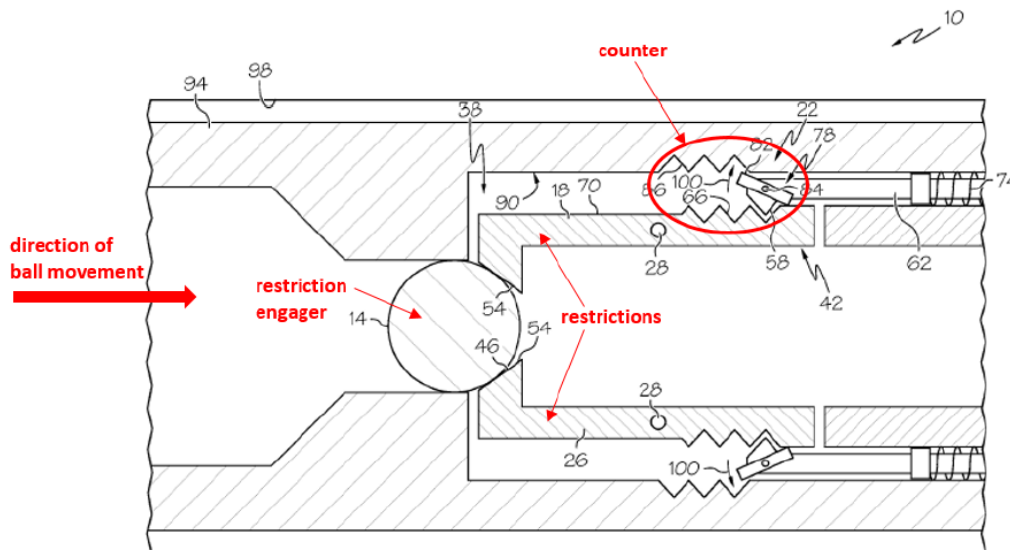


FIG. 1

Annotated Figure 1 represents a cross sectional view of a selectively movable seat arrangement in a resting position. Pet. 13.

Further, multiple restriction engaging systems can be installed at desired locations along the length of a well bore. *Ex. 1001*, 1:9–25.

The selectively movable seat arrangement depicted above also includes counter 22, which determines the number of iterations that pivot arms 26 can be forced open to allow restriction engager (ball) 14 to pass before they become locked in a closed position. Pressure behind ball 14 will cause pivot arms 26 to be forced open, thereby triggering a sequence of actions that cause counter 22 to index. *Id.* at 2:66–3:13. Specifically,

rotation of pivot arms 26 to an open position releases tooth 58 from opposing tooth 66 that has been holding it in place. *Id.* Upon release, lever 82, in turn, is forced (by biasing member 74, which is connected to the lever 82 via ram 62) in the direction opposite movement of ball 14 to engage the next adjacent opposing tooth 86. *Id.* at 3:14–3:27. After ball 14 passes the open restriction 18, pivot arms 26 return to the first pivot arm position, and tooth 58 is held in place by the next adjacent pivot arm tooth 66 to which tooth 58 was moved by biasing member 74. *Id.*

Counter 22 is indexed each time ball 14 is forced through a resting restriction 18. The number of times counter 22 can index before the restriction 18 becomes closed, such that subsequent balls 14 cannot be forced through with pressure, is a direct function of the number of opposing teeth pairs 66, 86. *Id.* at 3:39–41. Restriction engaging system 10 may reach a fully indexed state, as depicted in Figure 4, in which biasing member 74 forces ram 62 all the way until there is contact with stop 104. *Id.* at 3:39–49.

A second embodiment is depicted in Figures 5–7 of the '761 patent. Instead of using pivoting arms to cause the counter to index when a ball is forced through, a plurality of deformable arms 126 act in a similar manner. *Id.* at 4:3–9. Further, counter 122 uses a rotationally indexable sleeve 170 that rotates with each ball 114 passage and causes, upon completion of indexing, the arms 126 to move “longitudinally” (i.e., along the lengthwise direction of the well bore) from a position in which they can deform into annular recess 154, thereby facilitating passage of ball 114 (Fig. 5). *Id.* at 4:29–43. Arms 126 may eventually move to a position in which they are adjacent non-recessed portions 166 that block them from deforming (Fig. 6),

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