

[54] WELL TOOL

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[73] Assignee: Brown Oil Tools, Inc., Houston, Tex.

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[51] Int. Cl.² E21B 33/128; E21B 33/129

[52] U.S. Cl. 166/120; 166/179

[58] Field of Search 166/120, 118, 179, 122,
166/123, 133, 146, 6 PD; 175/307

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Primary Examiner—William F. Pate, III
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[57] ABSTRACT

The invention comprises a packer which seals against a surrounding well conduit. The packer comprises a mandrel which carries a radially extendable seal for engaging the well conduit. A hydraulic actuator is provided for urging the seal to its set position against the well conduit. Once set, the tool is responsive to fluid pressure differentials in the well conduit across the seal in either longitudinal direction to tighten the seal means. The cylinder of the actuator also serves as a guard to overlie and protect the seal in its unset position, while the piston is designed to define auxiliary piston area to reduce the required setting pressure. The seal is set by being extruded both longitudinally and radially over a retainer extending radially outwardly from the mandrel.

43 Claims, 11 Drawing Figures

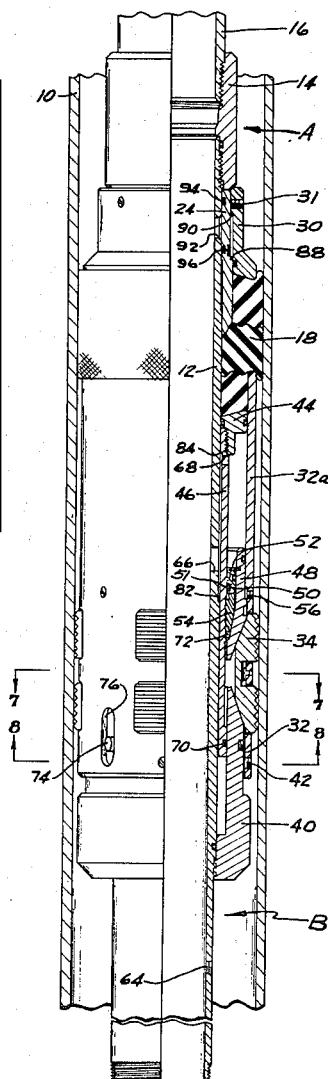
**WEATHERFORD
INTERNATIONAL, LLC, et al.**

EXHIBIT 1018

**WEATHERFORD
INTERNATIONAL, LLC, et al.**

v.

**PACKERS PLUS ENERGY
SERVICES, INC.**



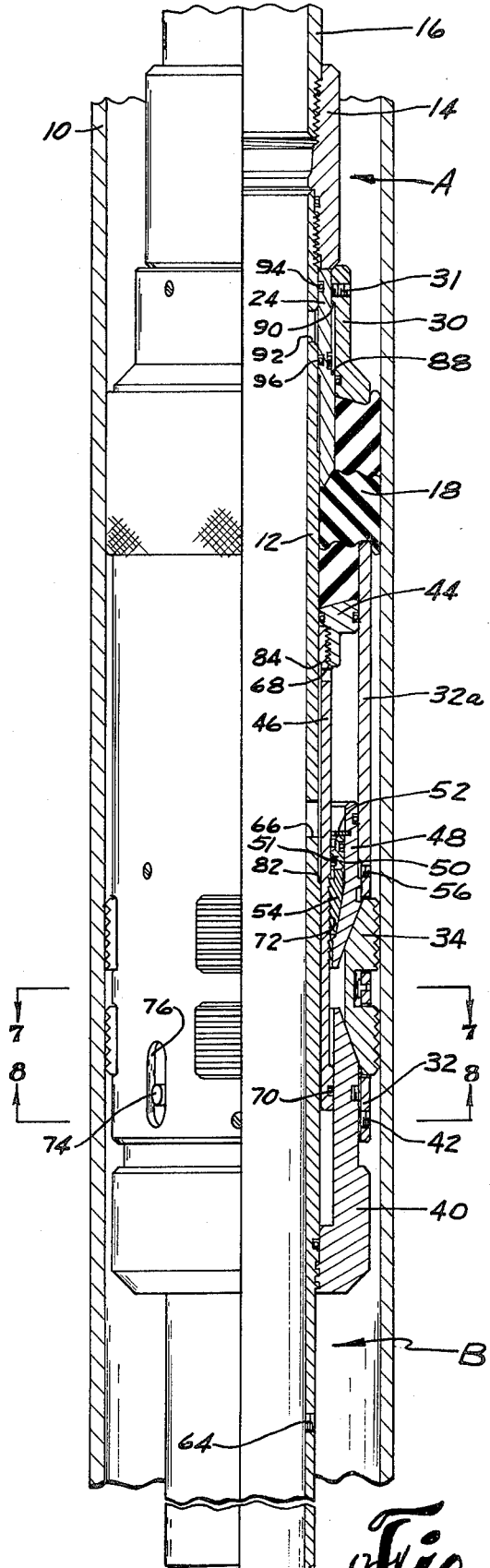
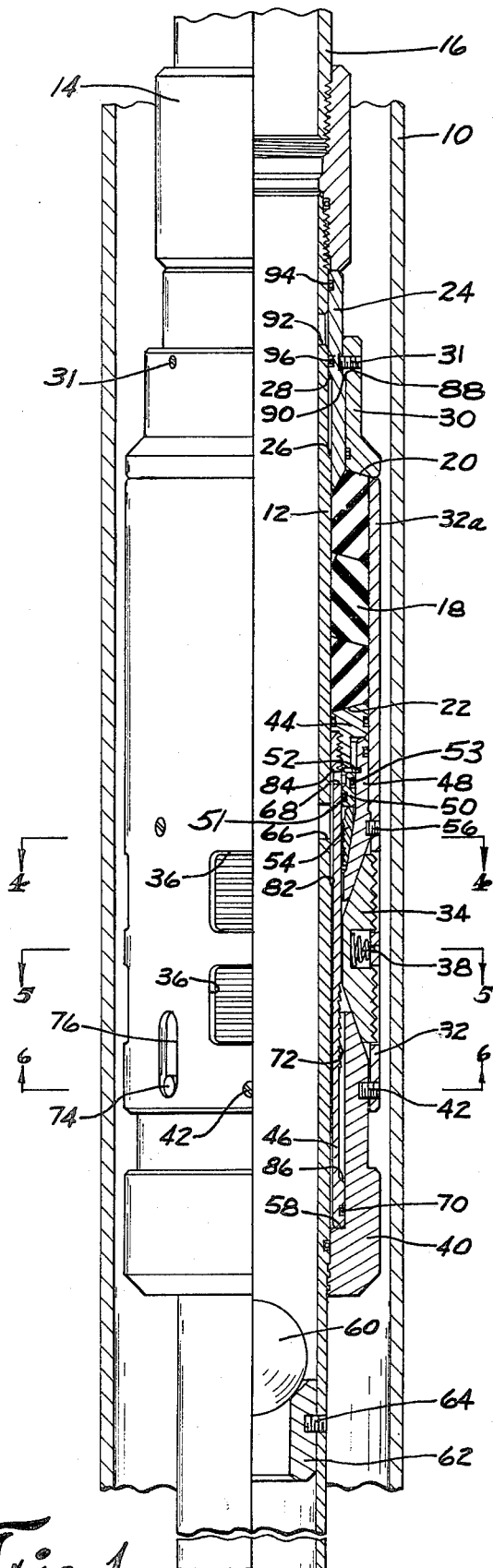


Fig. 1

Fig. 2

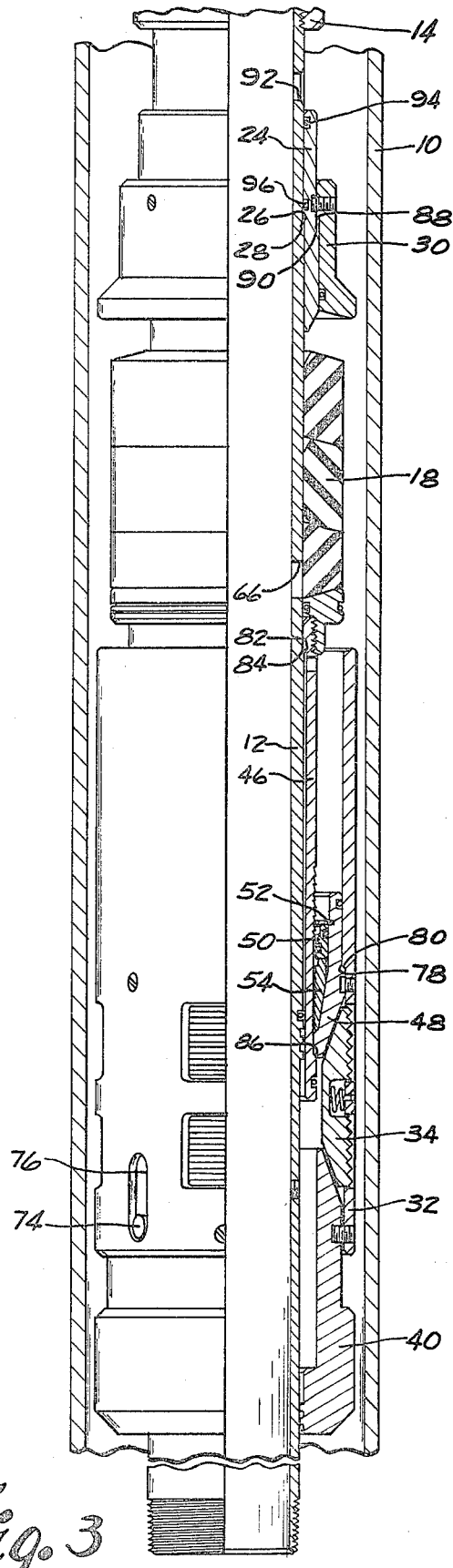


Fig. 3

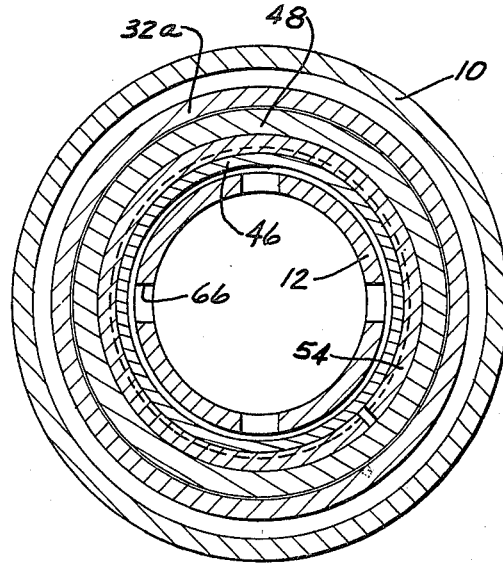


Fig. 4

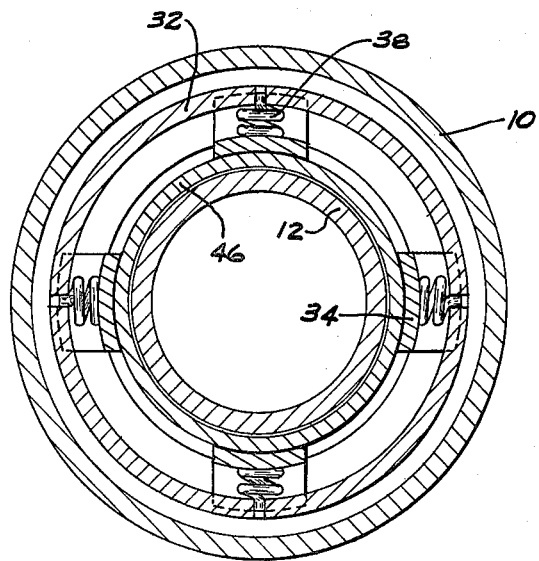


Fig. 5

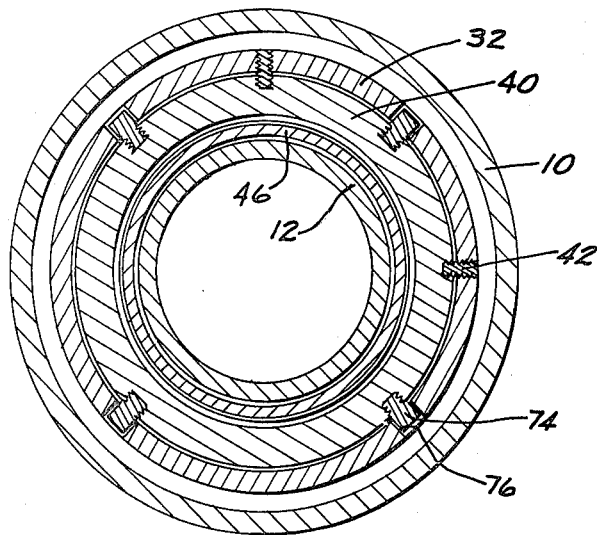


Fig. 6

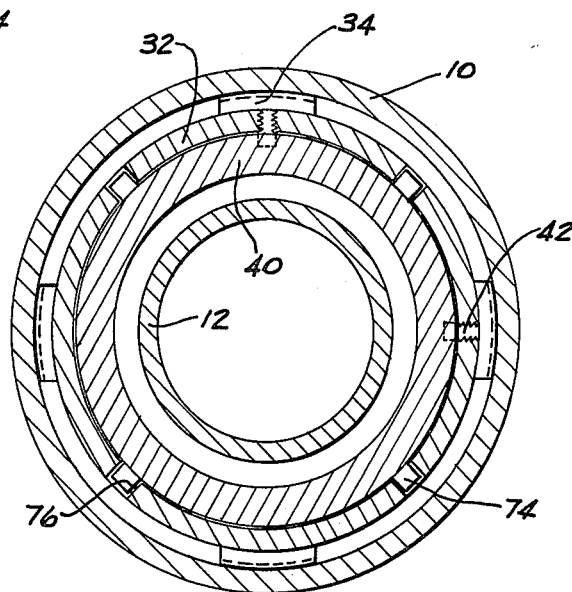


Fig. 8

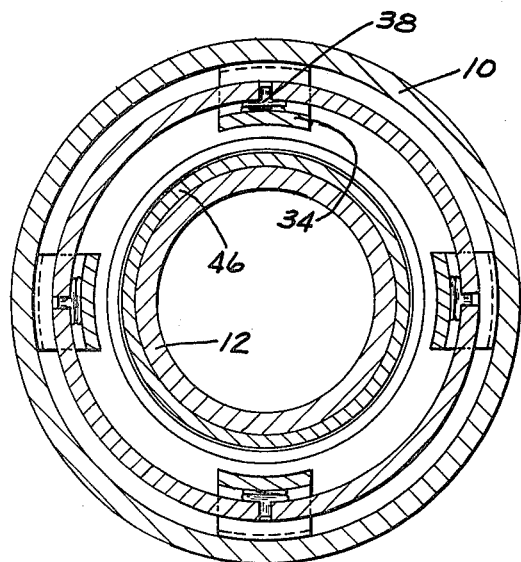
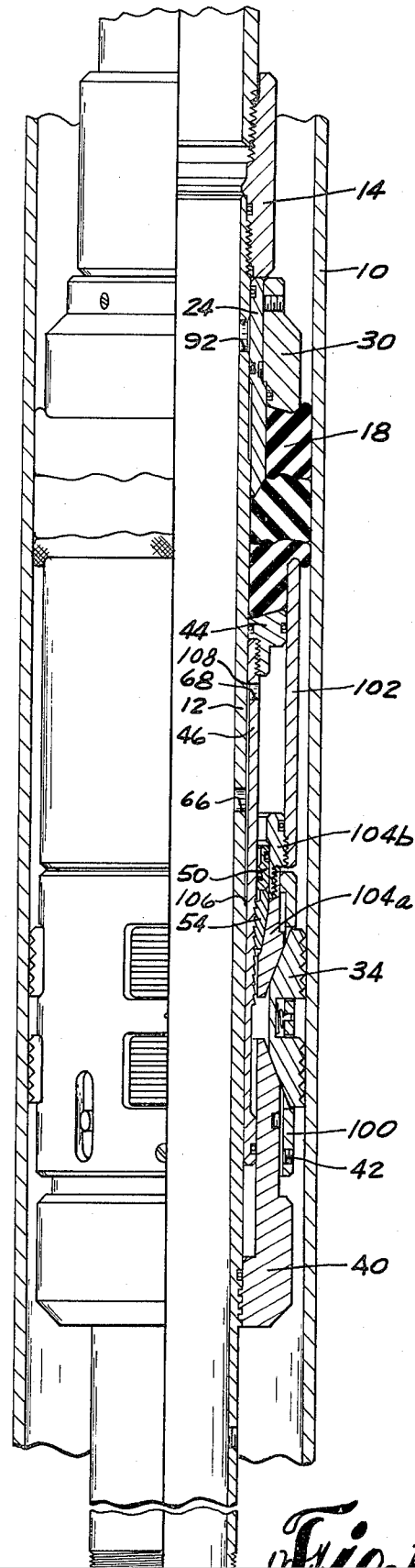
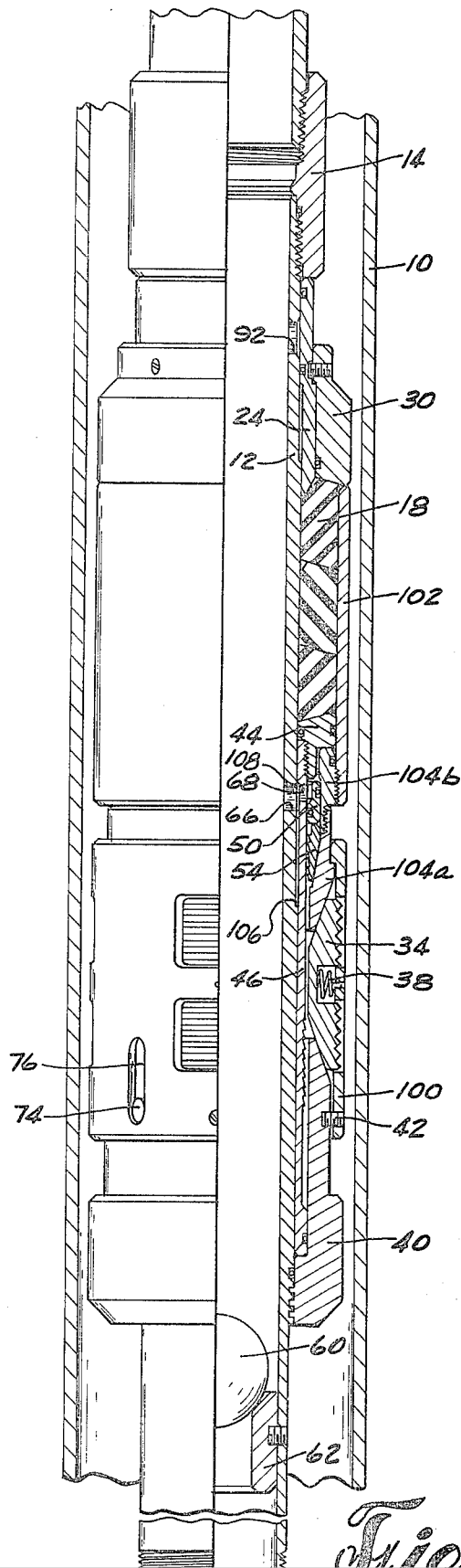


Fig. 7



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