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(12) **United States Patent**
Themig

(10) **Patent No.:** **US 7,832,472 B2**
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- (54) **HYDRAULIC OPEN HOLE PACKER**
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Houston, TX (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
- (21) Appl. No.: **12/495,455**
- (22) Filed: **Jun. 30, 2009**
(Under 37 CFR 1.47)
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US 2009/0283280 A1 Nov. 19, 2009

Related U.S. Application Data

- (60) Continuation of application No. 12/058,337, filed on Mar. 28, 2008, now Pat. No. 7,571,765, which is a continuation of application No. 11/550,863, filed on Oct. 19, 2006, now Pat. No. 7,543,634, which is a continuation of application No. 11/104,467, filed on Apr. 13, 2005, now Pat. No. 7,134,505, which is a division of application No. 10/299,004, filed on Nov. 19, 2002, now Pat. No. 6,907,936.
- (60) Provisional application No. 60/331,491, filed on Nov. 19, 2001, provisional application No. 60/404,783, filed on Aug. 21, 2002.
- (51) **Int. Cl.**
E21B 23/06 (2006.01)
E21B 33/124 (2006.01)
- (52) **U.S. Cl.** **166/191**; 166/182; 166/196
- (58) **Field of Classification Search** 166/191,
166/313, 373, 147, 318, 182, 196, 387; 175/61,
175/62

See application file for complete search history.

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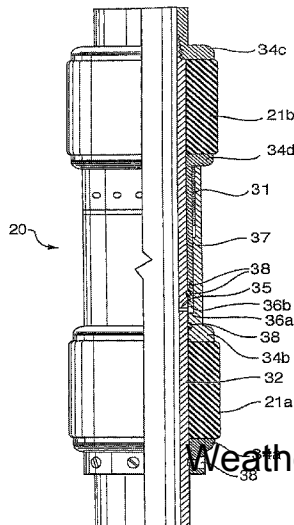
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(57) **ABSTRACT**

A tubing string assembly is disclosed for fluid treatment of a wellbore. The tubing string can be used for staged wellbore fluid treatment where a selected segment of the wellbore is treated, while other segments are sealed off. The tubing string can also be used where a ported tubing string is required to be run in in a pressure tight condition and later is needed to be in an open-port condition.

57 Claims, 9 Drawing Sheets



Weatherford International LLC et al.
Exhibit 1044

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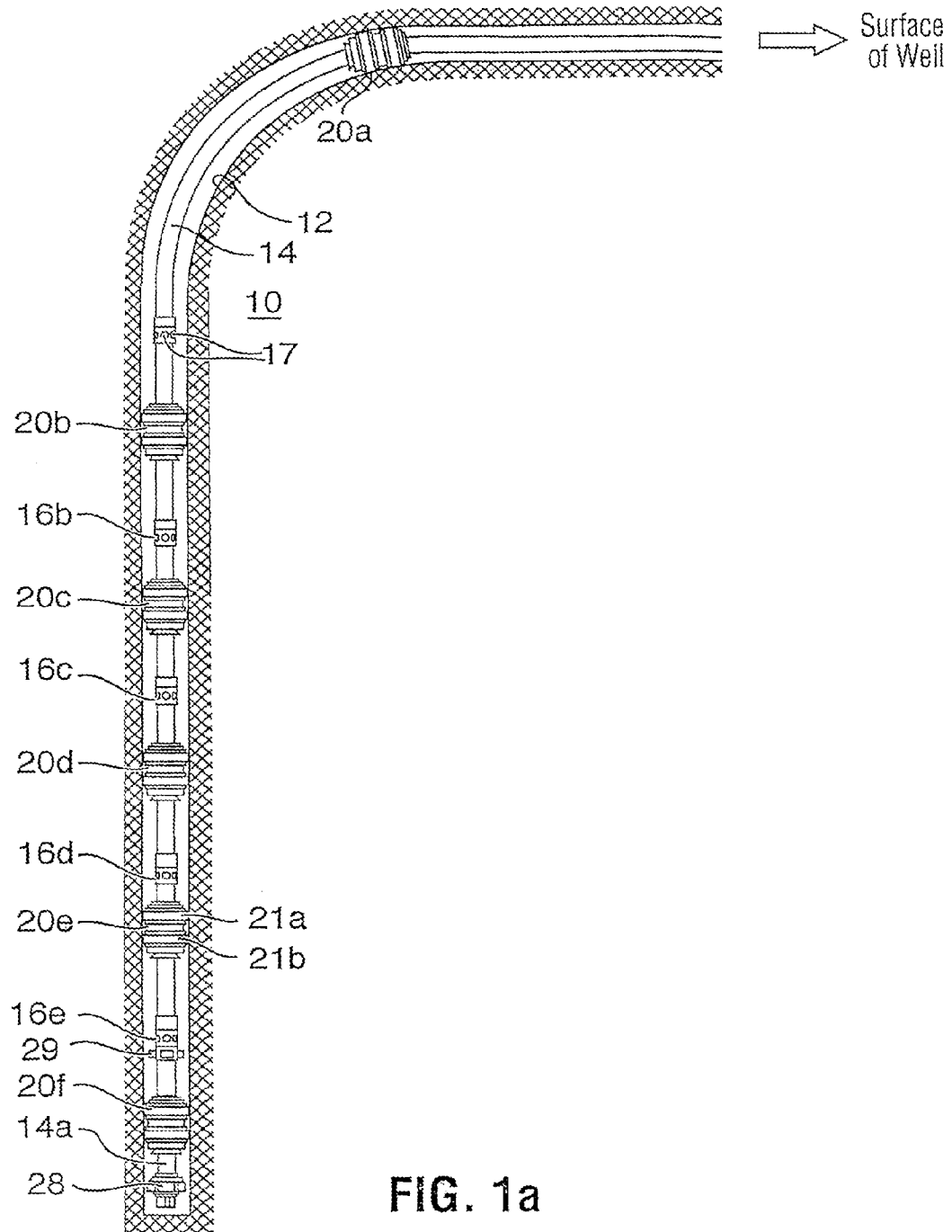


FIG. 1a

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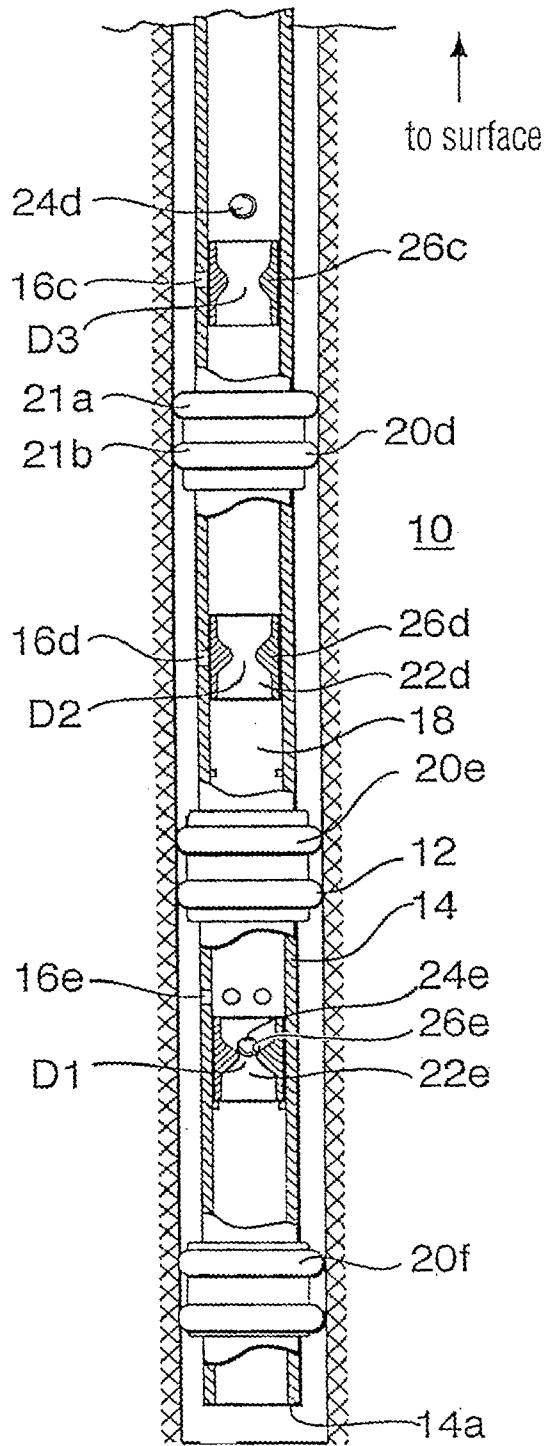


FIG. 1b

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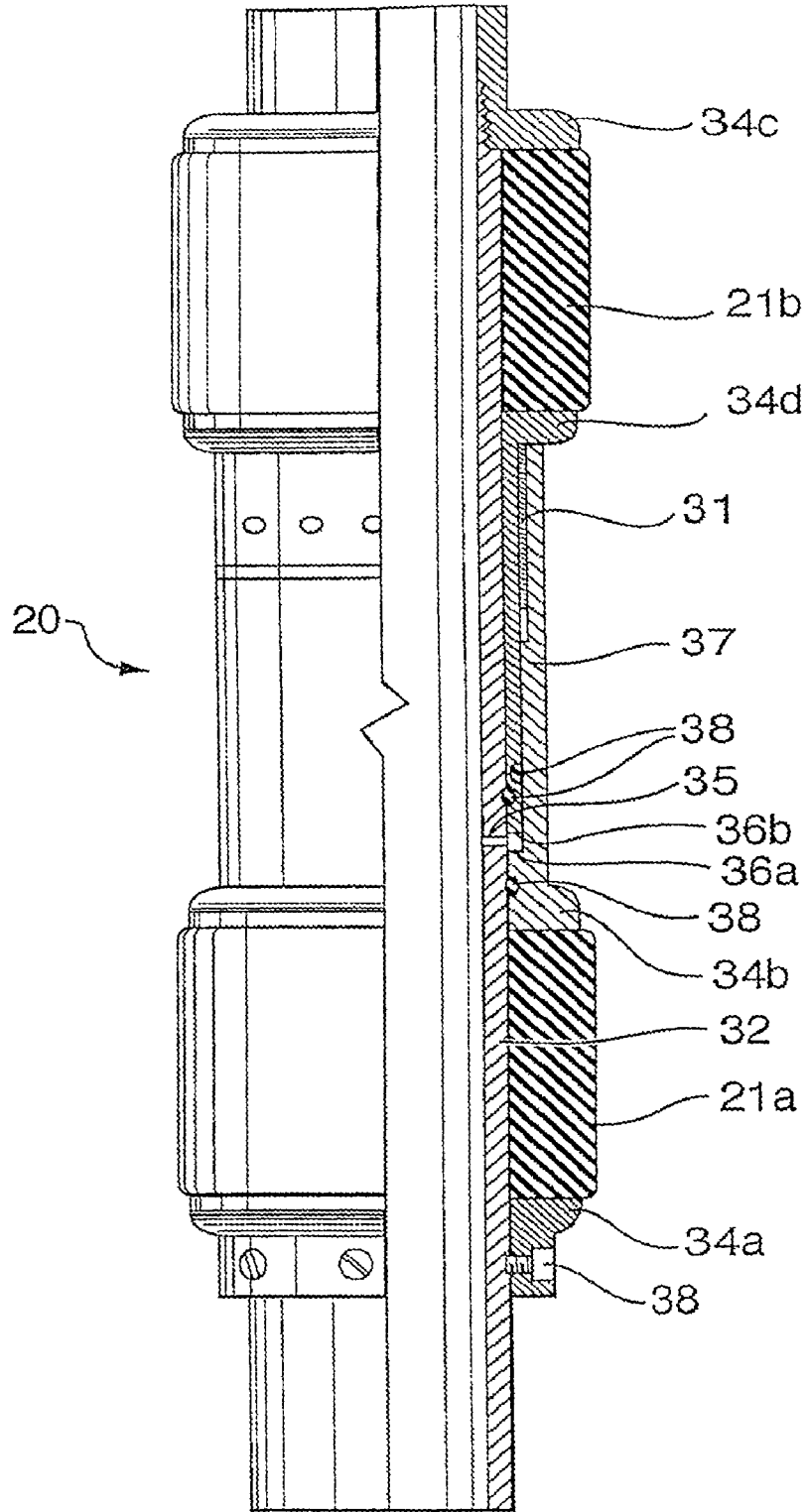


FIG. 2

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