

Title (en)

WELLBORE TOOLS INCLUDING SMART MATERIALS

Title (de)

BOHRLOCHWERKZEUGE MIT INTELLIGENTEN MATERIALIEN

Title (fr)

OUTILS DE TROU DE FORAGE COMPRENANT DES MATÉRIAUX INTELLIGENTS

Publication

**EP 3555425 B1 20201202 (EN)**

Application

**EP 17829757 A 20171204**

Priority

- US 201662434756 P 20161215
- US 201715626455 A 20170619
- US 2017064413 W 20171204

Abstract (en)

[origin: WO2018111585A1] A wellbore pump (100) that includes a pump housing (114), a pump stage (126) positioned within the pump housing (114), the pump stage (126) including a stationary diffuser (112a, 112b) and a rotating impeller (118) positioned within the diffuser (112a, 112b), a pump head (102) attached to a first end of the pump housing (114), a compression tube (104) attached between the pump head (102) and the diffuser (112b), the compression tube (104) increasing a contacting force to prevent rotation of the diffuser (112b) with the impeller (118), and a ring-shaped memory material (108) positioned around the diffuser (112b), the memory material capable of reversibly expanding from a temporary state to a permanent state in response to wellbore operating conditions to form an interference fit with an inner surface of the pump housing (114) during operation of the wellbore pump under the wellbore operating conditions.

IPC 8 full level

**E21B 43/12** (2006.01); **F04D 1/06** (2006.01); **F04D 13/08** (2006.01); **F04D 29/44** (2006.01); **F04D 29/62** (2006.01)

CPC (source: EP US)

**E21B 43/128** (2013.01 - EP US); **F04D 13/08** (2013.01 - EP US); **F04D 29/44** (2013.01 - US); **F04D 29/445** (2013.01 - EP US); **F04D 29/60** (2013.01 - US); **F04D 29/628** (2013.01 - EP US); **F04D 1/06** (2013.01 - EP US); **F05D 2260/30** (2013.01 - EP US)

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**WO 2018111585 A1 20180621**; CA 3044861 A1 20180621; CA 3044861 C 20210817; CN 110088425 A 20190802; CN 110088425 B 20211210; EP 3555425 A1 20191023; EP 3555425 B1 20201202; JP 2020502417 A 20200123; JP 6966553 B2 20211117; SA 519401853 B1 20220511; US 2018172020 A1 20180621

DOCDB simple family (application)

**US 2017064413 W 20171204**; CA 3044861 A 20171204; CN 201780077801 A 20171204; EP 17829757 A 20171204; JP 2019532776 A 20171204; SA 519401853 A 20190523; US 201715626455 A 20170619