

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
26 June 2025 (26.06.2025)



(10) International Publication Number
WO 2025/136421 A1

(51) International Patent Classification:

E21B 34/14 (2006.01) *E21B 34/08* (2006.01)
E21B 34/10 (2006.01)

NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(21) International Application Number:

PCT/US2023/085948

(22) International Filing Date:

26 December 2023 (26.12.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

18/392,261 21 December 2023 (21.12.2023) US

(71) Applicant: **HALLIBURTON ENERGY SERVICES, INC.** [US/US]; 3000 N. Sam Houston Parkway E, Houston, Texas 77032-3219 (US).

Published:

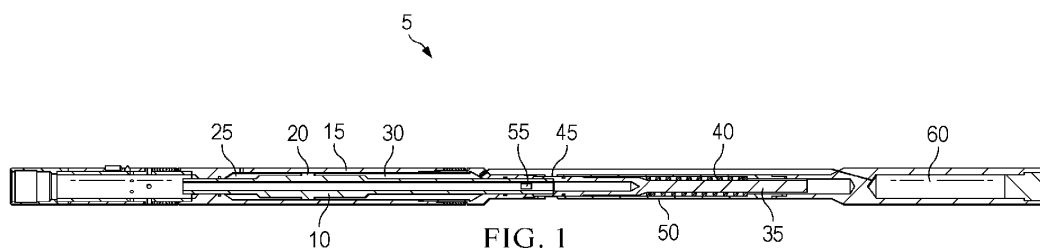
— with international search report (Art. 21(3))

(72) Inventor: **GUNASEKARAN, Mohan**; 11 Tuas South Ave 12, Singapore 637131 (SG).

(74) Agent: **TEAKELL, Scott M.** et al.; c/o Barnes & Thornburg, LLP, One North Wacker Drive, Suite 4400, Chicago, Illinois 60606-2833 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,

(54) Title: TUBING PRESSURE INSENSITIVE SAFETY VALVE WITH HYDROSTATIC COMPENSATION



(57) Abstract: Safety valves and methods of operating the same. An example safety valve includes a first piston disposed within a safety valve body. The first piston forms a first seal with the interior of the safety valve body. The first piston, the interior of the safety valve body, and the first seal define two chambers within the safety valve separated by the first seal. The first chamber is a control line pressure chamber disposed uphole of the first seal, and the second chamber is a fluid compression chamber disposed downhole of the first seal. The control line pressure chamber is pressurized to translate the first piston downhole in an axial direction. A second seal is formed with an annulus outside of and adjacent to the safety valve. A biasing mechanism translates the second piston uphole in the axial direction. A fluid volume chamber is fluidically connected to the fluid compression chamber.

WO 2025/136421 A1