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(71) Applicant: **PETROLEUM TECHNOLOGY COMPANY AS** [NO/NO]; Slettestrandveien 13, Stavanger, N-4032 (NO).

(72) Inventors: **SEVHEIM, Ole**; Armauer Hansens vei 42D, N-4032 Stavanger (NO). **KLEPPA, Erling**; Klovsteinsveien 17, N-4100 Jørpeland (NO). **HARESTAD, Kristian**; Harestadveien 4, N-4070 Randaberg (NO).

(74) Agent: **ONSAGERS AS**; P.O. Box 1813 Vika, N-0123 Oslo (NO).

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(54) Title: VALVE ARRANGEMENT AND METHOD OF OPERATING THE SAME

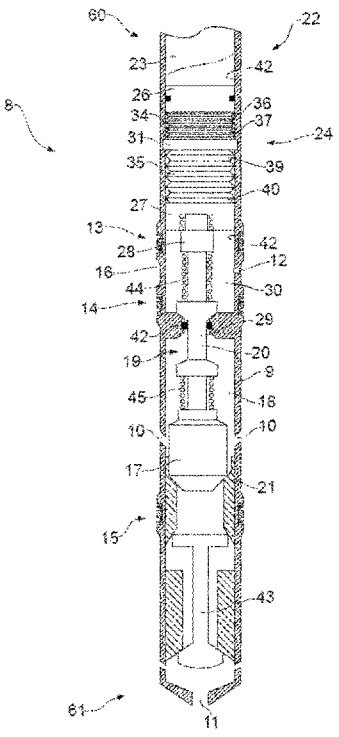

FIG. 2

(57) Abstract: A valve arrangement (8) for controlling the flow of an injection fluid from a well annulus (4) into a well conduit (5) of a hydrocarbon well (1), comprising a valve body (9) being insertable into a side pocket mandrel (6) of the hydrocarbon well (1), the valve body comprising: at least one inlet port (10) for receiving the injection fluid from the well annulus;at least one outlet port (11) for delivering the injection fluid to the well conduit; an injection fluid valve (19) being arranged in fluid communication with the least one inlet port and the at least one outlet port and being operable between an open position and a closed position for controlling the flow of the injection fluid through the valve arrangement; an actuating device (22) for actuating the injection fluid valve towards the closed position; and a bellows arrangement (24) comprising a first pressure member (26), a second pressure member (27) and at least one bellows element (34, 35) enclosing at least one bellows chamber comprising a bellows fluid, wherein the pressure members are hydraulically connected via the bellows fluid; wherein the injection fluid valve is connected to the second pressure member, and the actuating device is arranged adjacent to the first pressure member for biasing the injection fluid valve towards the closed position via the first pressure member, the bellows fluid and the second pressure member. According to the invention the valve arrangement comprises at least one control line port (12) being arranged in the valve body for fluid communication with a control line (7) of the well; and a control fluid chamber (30) being arranged inside the valve body adjacent to the second pressure member and in fluid communication with the at least one control line port, wherein the control fluid chamber comprises a hydraulic control fluid for biasing the injection fluid valve towards the open position via the second pressure member.

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