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

(72) Inventor: **EL MALLAWANY, Ibrahim**; Jubail Highway Abu Hadria Exit, Al-Khobar, 31952 (SA).

(74) Agent: **CARROLL, Rodney B.**; 4965 Preston Park Boulevard, Suite 195E, Plano, Texas 75093 (US).

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(54) Title: DOWNHOLE SAFETY VALVE WITH ELECTRO-MAGNETIC TOOTH BRAKE SYSTEM

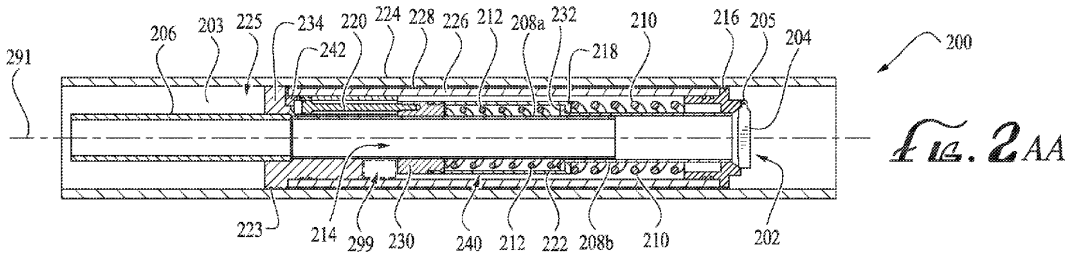


Fig. 2AA

(57) Abstract: Disclosed embodiments relate to electric safety valves for a well, which may be configured to close in the event of a power loss for example. In embodiments, the electric safety valve may include an electro-magnetic tooth brake system. For example, a plurality of teeth may be coupled to a translating sleeve disposed within an outer housing, a pinion may be mounted within the outer housing and configured to mesh with the plurality of teeth, and an electric tooth brake may have brake teeth configured to engage the pinion upon activation of an electro-magnet. Thus, when the electro-magnet is powered and the teeth are engaged/meshing, the translating sleeve may be held in position to hold open the valve. A loss of power may disengage the teeth, releasing the translating sleeve and allowing the valve to close. Related methods and systems are also disclosed.

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