## ABSTRACT

### SUBSURFACE SAFETY VALVE FLAPPER

A flapper for use as a component of a safety valve designed for deployment in a well bore having well bore fluids. The flapper includes a flapper body forming a flapper valve bore therethrough. The flapper body further forms a groove proximate to the flapper bore. The flapper also includes a plunger member sized and configured to be received in the flapper valve bore. The plunger member includes a first end portion and a second end portion. Additionally, the flapper includes a leaf spring including a primary end portion and a secondary end portion, the primary end portion of the leaf spring detachably attached to the second end portion of the plunger member and unattached to the flapper body and the secondary end portion of the leaf spring being sized and configured to be received and retained in the groove and to bias the plunger member into the flapper valve bore. Forces exerted on the flapper body when rotating between an open state and a closed state during use of the safety valve urge at least a portion of the leaf spring into the groove.


FIGURE 1