

Abstract of the Disclosure

APPARATUS AND METHOD FOR ORIENTING A DOWNHOLE TOOL IN A
HORIZONTAL OR HIGHLY DEVIATED WELL

A tool for performing a downhole function in a horizontal or highly deviated well has a downhole structure with a longitudinal axis and constructed to turn about the axis in response to a moment applied about the axis. The structure includes at least one ballast chamber containing a flowable inert ballast material, such that the gravitational center of the material-containing chamber is effectively offset from the longitudinal axis of the structure to enable the chamber to contribute to gravitational orientation of the tool within the well to a desired position. In another configuration, the structure is rotatable within a housing and supported by bearings. The chamber is preferably filled with tungsten or depleted uranium powder for maximum density. A swivel for use with the tool, capable of passing both hydraulic pressure and detonation waves, decreases the overall length of the rotating part of the tool string. The method of using an offset ballast to desirably orient a tool in a horizontal or highly deviated well is also disclosed.