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(54) Title: METHOD AND APPARATUS FOR DRILLING WITH HIGH-PRESSURE, REDUCED SOLID CONTENT LIQUID

(57) Abstract

A drillstring terminating in an drill bit (3) is run into a borehole. A reduced solid content drilling fluid is pumped through the drillstring tubes and out the bit, wherein the drilling fluid impinges upon and disintegrates formation material in cooperation with the bit. An annulus fluid having a density greater than that of the drilling fluid is continuously pumped into the annulus (5) between the borehole and the drillstring, wherein the annulus fluid extends substantially from the surface to the bottom of the drillstring. Drilling fluid and cuttings resulting from disintegration of formation material are returned to the surface through a substantially unobstructed tubular passage (17) in the drillstring. The annulus fluid is maintained under a selected and controlled pressure in the annulus, wherein an interface is formed at the drill bit at which annulus fluid mixes with the drilling fluid and is returned along with the drilling fluid and cuttings, and drilling fluid is substantially prevented from entering the annulus.

