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ABSTRACT OF THE DISCLOSURE

SURFACE CONTROLLED FORMATION ISOLATION VALVE ADAPTED FOR DEPLOYMENT OF A DESIRED LENGTH OF A TOOL STRING IN A WELLBORE

A method and apparatus is disclosed for building a tool string uphole of any desired length prior to lowering that tool string downhole into a wellbore for the purpose of performing wellbore operations downhole during a single trip into the wellbore. The apparatus includes a valve disposed between an upper section and a lower section of the wellbore and adapted to open and to close, the upper section of the wellbore being isolated from the lower section of the wellbore when the valve is closed. The tool string of any desired length is built in the upper section of the wellbore when the valve is closed and the upper section of the wellbore is isolated from the lower section of the wellbore. The apparatus also includes a mandrel and piston, the valve being initially disposed in an open position and adapted to be changed from the open position to a closed position when the mandrel is shifted from one position to another position. An upper chamber communicates with a gas reservoir and a valve manifold at the surface. The manifold includes a slow bleed valve and a fast bleed valve disposed at the wellbore surface. A gas metering orifice separates the upper chamber from a lower chamber. The mandrel is shifted in one direction and the valve changes position when a gas is delivered from the surface of the wellbore to the upper chamber thereby moving the piston and the mandrel, the mandrel shifting in an opposite direction and the valve changing position again when the gas in the upper chamber leaks from the upper chamber to the fast bleed valve at the surface. The mandrel shifts in the one direction and the valve changes position again when the gas from the surface is delivered to the upper chamber. However, the mandrel does not shift in the opposite direction and the valve does not change position again when the gas in the upper chamber

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leaks from the upper chamber to the slow bleed valve at the surface.

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