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(54) Title: DRILLING COMPONENTS AND SYSTEMS TO DYNAMICALLY CONTROL DRILLING DYSFUNCTIONS AND METHODS OF DRILLING A WELL WITH SAME

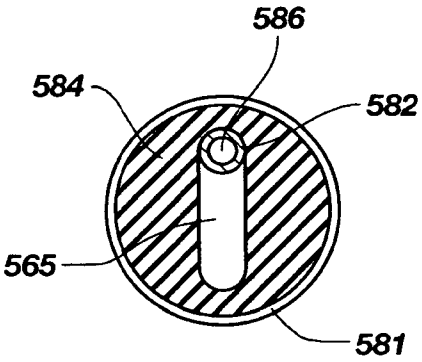

FIG. 6

(57) Abstract: Drilling tools that may detect and dynamically adjust drilling parameters to enhance the drilling performance of a drilling system used to drill a well. The tools may include sensors, such as RPM, axial force for measuring the weight on a drill bit, torque, vibration, and other sensors known in the art. A processor may compare the data measured by the sensors against various drilling models to determine whether a drilling dysfunction is occurring and what remedial actions, if any, ought to be taken. The processor may command various tools within the bottom hole assembly (BHA), including a bypass valve assembly and/or a hydraulic thruster to take actions that may eliminate drilling dysfunctions or improve overall drilling performance. The processor may communicate with a measurement while drilling (MWD) assembly, which may transmit the data measured by the sensors, the present status of the tools, and any remedial actions taken to the surface.

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