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(54) Title of the Invention: **Optical splash communication in downhole applications**  
Abstract Title: **Optical splash communication in downhole applications**

(57) To optimize the efficiency and reliability of downhole data transmissions, an optical splash communication system may be utilized. A downhole tool may include an optical splash communication system that comprises multiple electrical elements where the electrical elements communicate with each other by transmitting and receiving via free space an optical splash signal through an inner space of the downhole tool. The electrical elements may comprise or be coupled to a light source and a detector. Multiple optical splash communication systems may be deployed in multiple downhole tools such that each downhole tool may communicate with another downhole tool via an opening, for example, a transparent sealed window, between the downhole tools. The opening is sufficient to permit transmissions to occur even when the downhole tools are rotated independently of each other.

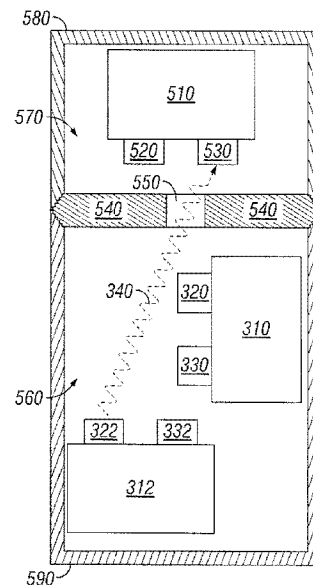


FIG. 5