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(54) **Title:** ENHANCED BACKUP RING EDGE FEATURES FOR METAL FACE SEAL IN ROLLER CONE DRILL BITS

(57) **Abstract:** A backup ring for a face seal in a roller cone bit is configured to resist wear from drilling fluids present adjacent exposed faces of the backup ring. Portions are removed from an exposed end face in a variety of shapes while the hardness of the material is increased. The removal of material offsets an increase in force that would be transmitted through the backup ring on face seal assembly due to flexing. A spring can optionally be included in the removed material location. Another way is to increase the edge density of all or part of the exposed edges while leaving the interior portions unaffected by using electron beam radiation to increase the crosslink density or by other techniques that allow a unitary structure with a more durable edge region.

