SUMMARY OF INVENTION

According to a first aspect of the present invention, there is provided an apparatus for reducing stick-slip in drilling operations, comprising: a cylindrical tool body; a first roller disposed on an outer surface of the cylindrical tool body at a first location, and comprising a first longitudinal axis parallel to a longitudinal axis of the cylindrical tool body and about which the first roller rotates; and a second roller disposed on the outer surface of the cylindrical tool body at a second location, and comprising a second longitudinal axis parallel to the longitudinal axis of the cylindrical tool body and about which the second roller rotates, wherein the second location is offset laterally and circumferentially from the first location on the cylindrical tool body.

According to a second aspect of the present invention, there is provided a method for reducing stick-slip in drilling operations, comprising: coupling a downhole tool to a drilling string, wherein the downhole tool comprises a cylindrical tool body; a first roller disposed on an outer surface of the cylindrical tool body at a first location, and comprising a first longitudinal axis parallel to a longitudinal axis of the cylindrical tool body and about which the first roller rotates; and a second roller disposed on the outer surface of the cylindrical tool body at a second location, and comprising a second longitudinal axis parallel to the longitudinal axis of the cylindrical tool body and about which the second roller rotates, wherein the second location is offset laterally and circumferentially from the first location on the cylindrical tool body; and positioning the downhole tool within a borehole.

According to a third aspect of the present invention, there is provided a method for manufacturing a downhole tool for reducing stick-slip in drilling operations, comprising: positioning a first roller on an outer surface of a cylindrical tool body at a first location, the first roller comprising a first longitudinal axis parallel to a longitudinal axis of the cylindrical tool body and about which the first roller rotates; and positioning a second roller on the outer surface of the cylindrical tool body at a second location, the second roller comprising a second longitudinal axis parallel to the longitudinal axis of the cylindrical tool body and about which the second roller rotates, wherein the second location is offset laterally and circumferentially from the first location on the cylindrical tool body.