SUMMARY OF THE INVENTION

In one embodiment, a slip assembly is provided for securing a tool or tubular within another downhole tubular in a well. An upper c-ring slip body and a lower c-ring slip body each include a plurality of circumferentially spaced outer gripping surfaces. An actuator member is axially movable relative to both the upper and lower c-ring slip bodies, and has camming surfaces for engagement with each slip body, which preferably is biased radially outward for engagement with the downhole tubular. A plurality of circumferentially spaced and axially extending slats interconnect the upper and lower slip bodies, with each slat having a outer slat surface spaced radially inward of the upper and lower gripping surfaces.

According to a first aspect, there is provided a slip assembly for securing a tool or tubular within another downhole tubular in a well, the slip assembly comprising: an upper C-ring slip body including a plurality of circumferentially spaced outer upper gripping surfaces and a plurality of interior upper surfaces; a lower C-ring slip body including a plurality of circumferentially spaced outer lower gripping surfaces and a plurality of interior lower surfaces, the upper C-ring slip body being axially spaced from the lower C-ring slip body; an actuator member axially movable relative to both the upper and lower C-ring slip bodies, the actuator member having a radially outer upper camming surface for engagement with the plurality of interior upper surfaces on the upper C-ring slip body and a radially outer lower camming surface axially fixed relative to the upper camming surface for engagement with the plurality of interior lower surfaces on the lower C-ring slip body; and a plurality of circumferentially spaced and axially extending slats each axially fixedly interconnecting the upper C-ring slip body and the lower C-ring slip body, each slat having an outer slat surface radially inward of the upper and lower outer gripping surfaces.

According to a second aspect, there is provided a slip assembly for use with an axially movable actuator member for securing a tool or a tubular within another downhole tubular in a well, the slip assembly comprising: an upper C-ring slip body including a plurality of circumferentially spaced outer upper gripping surfaces and a radially interior upper surface; a lower C-ring slip body including a plurality of circumferentially spaced outer lower gripping surfaces and a radially interior lower surface, the upper C-ring slip body being axially spaced from the lower C-ring slip body; a plurality of circumferentially spaced and axially extending slats each fixedly interconnecting the upper C-ring slip body and the lower C-ring slip body; and each of the plurality of outer upper gripping surfaces and each of the plurality of outer lower gripping surfaces are circumferentially spaced from another of the respective outer upper gripping surfaces and the outer lower gripping portions by a circumferential gap.

According to a third aspect, there is provided a slip assembly for securing a tool or tubular within another downhole tubular in a well, the slip assembly comprising: an upper C-ring slip body including a plurality of circumferentially spaced and axially extending outer upper gripping surfaces and a radially interior upper surface; a lower C-ring slip body including a plurality of circumferentially spaced and axially extending outer lower gripping surfaces and a radially interior lower surface, the upper C-ring slip body being axially spaced from a lower C-ring slip body; an actuator member axially movable relative to both the upper and lower C-ring slip bodies, the actuator member having a radially outer upper camming surface for sliding engagement with the interior upper surface on the upper C-ring slip body and a radially outer lower camming surface axially fixed relative to the upper camming surface for sliding engagement with the interior lower surface on the lower C-ring slip body; a plurality of axially extending slats each fixedly interconnecting the upper C-ring slip body and the lower C-ring slip body; and each of the plurality of outer upper gripping surfaces are interconnected by an upper C-shaped ring, and each of the plurality of outer lower gripping surfaces are interconnected by a lower C-shaped ring.

These and further features and advantages of the present invention will become apparent from the following detailed description, wherein reference is made to the figures in the accompanying drawings.