ABSTRACT

SYSTEM, METHOD, AND APPARATUS FOR ENERGIZABLE METAL SEALS IN WELL HEADS

[0024] A bi-directional metal seal is energized and un-energized by a rolling action that takes place between radiused seal lips. The seal forms an assembly with upper and lower energizing rings. The rings have external grooves for engaging hook ends on the inner surfaces of the seal lips in a nesting arrangement when the seal is in the un-energized position. When the upper ring is pulled upward, the seal is un-energized and does not contact the adjacent conductors or wellhead members. When the upper ring is forced downward, the hooks ends of the seal are forced out of the grooves causing the seal lips to roll around in a radial outward direction, rather than stretch, and expand against the seal's outer diameter. This energizing process also causes the seal to become smaller on the seal's inner diameter, and thus forms a pressure-assist, metal-to-metal seal with the adjacent conductors.

Figure 4