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(54) Title: CUTTER ASSEMBLY FOR TUNNEL BORING MACHINE WITH PRESSURE COMPENSATION

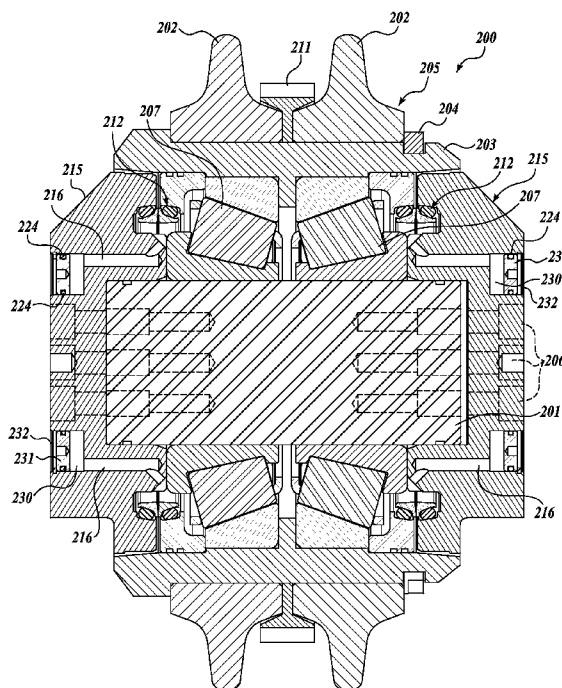


Fig.4.

(57) Abstract: A pressure-compensated cutter assembly for a tunnel boring machine includes a shaft a cutter ring assembly rotatably mounted on the shaft, and first and second end retainers non-rotatably attached to the shaft. Rotary seal groups, immersed in lubricant, provide a moving seal between the rotating cutter ring assembly and the end retainers. A movable piston member is exposed to ambient pressures, and contacts the lubricant, such that increasing ambient pressure will increase the lubricant pressure, thereby keeping the pressure differential across the seal small. In one embodiment, the piston is a floating retainer portion. In another embodiment, the piston is an annular piston, and in another embodiment, the piston is a plurality of smaller pistons disposed in the first retainer.



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