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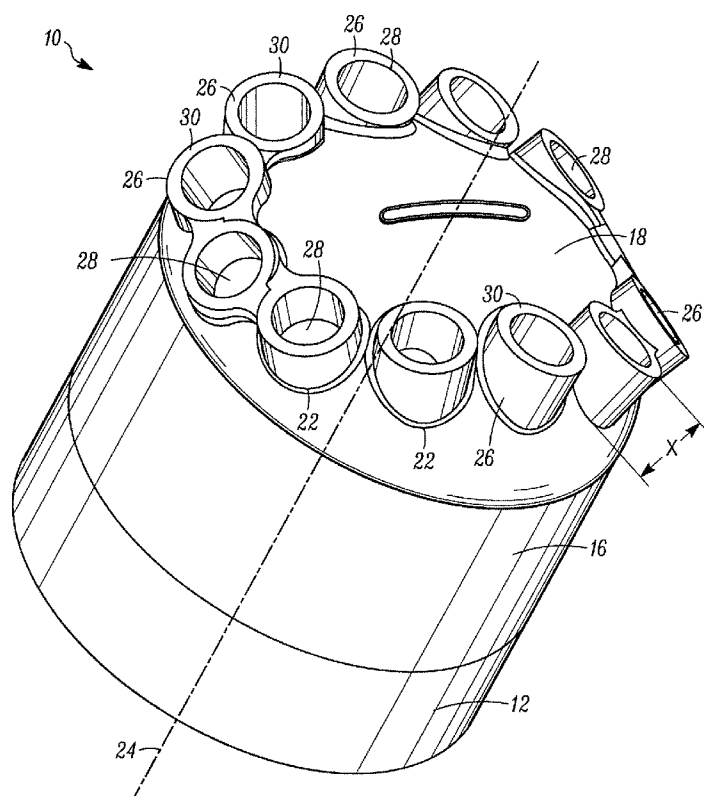


FIG. 5A

(57) Abstract: A spray nozzle for discharging at least one fluid in a spray pattern into a fluid stream in a vessel, such as an atomized mixture of oil and steam in a fluidic catalytic cracking unit, wherein the nozzle alters the flow patterns of the fluid stream in the vicinity of the nozzle to inhibit erosion of the nozzle and maintain the spray pattern. The nozzle comprises an inlet member defining at least one inlet conduit and an outlet member in fluid communication with the inlet member. The outlet member includes an exterior surface and a plurality of bosses angularly spaced relative to each other about an axis of the outlet, each boss defining an outlet aperture in fluid communication with the at least one inlet conduit having a length (L) and a diameter (D) and an axially extending wall, wherein the axially extending wall extends outwardly a length (X) greater than about 1/8 inch relative to the exterior surface and L/D is at least about 1/2.

WO 2008/100998 A1



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