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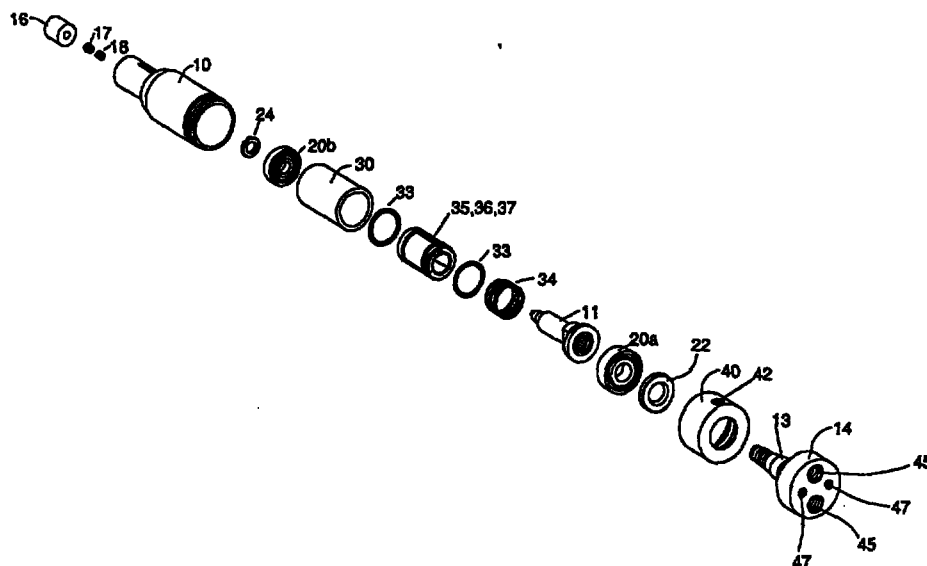


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(54) Title: **LIQUID ROTARY NOZZLE WITH COIL SPRING RETARDER**



(57) Abstract

A high pressure liquid nozzle housing (10) encloses a self-rotating speed-controlled nozzle (14). A cylindrical sleeve (30) in the housing (10) forms an inwardly facing friction surface engageable by a nozzle-driven friction generating speed control mechanism to provide increasing retarding force on the nozzle (14) as nozzle speed increases for controlling maximum nozzle rotational speed. The speed control mechanism includes a radially expandable helical coil spring (34) rotatable with the nozzle (14) with its windings at low nozzle speeds slightly spaced from the sleeve. An input end of the coil spring (34) is driven by the nozzle structure in a direction tending to unwind the spring (34) and increase its outer diameter in response to rotation of the nozzle (14). An output end of the coil spring (34) rotatably drives a cluster of centrifugal weights (35, 36, 37) which are spring biased away from the sleeve (30).