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(54) Title: LASER-PROCESSING APPARATUS WITH DEBRIS REMOVAL SYSTEM AND INTEGRATED BEAM DUMP AND METHODS OF OPERATING THE SAME

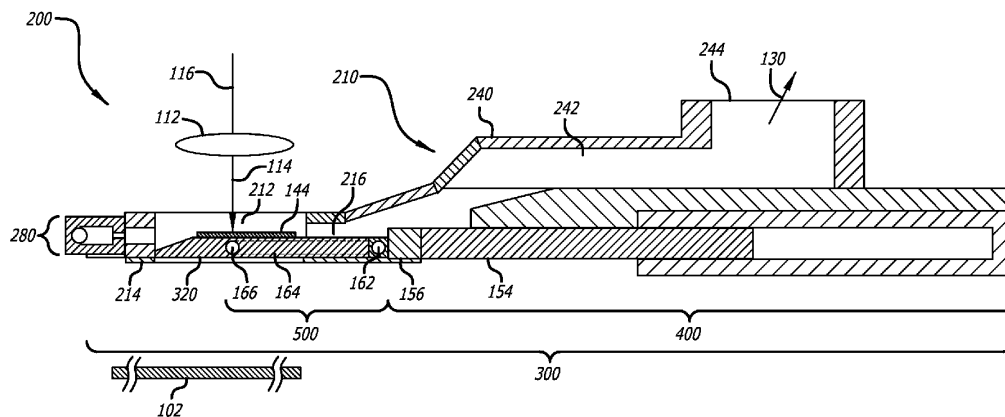


FIG. 8

(57) Abstract: A laser-processing apparatus is disclosed. In one embodiment, the laser-processing apparatus includes a debris removal system with an integrated beam dump system, the beam dump system operative to selectively position an absorber within the beam path of a beam of laser energy. The beam dump system may allow the beam of laser energy to propagate through the scan lens of the laser-processing apparatus, but prevent the beam of laser energy from processing a workpiece. The beam dump system may include an actuator assembly operative to retract the absorber from the beam path, thereby allowing the beam to propagate to the workpiece and for debris from laser processing to be drawn into a vacuum nozzle, thereby preventing damage to the scan lens. The beam dump system may further include a heat transfer system operative to control the rate of heat transferred away from the absorber.

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