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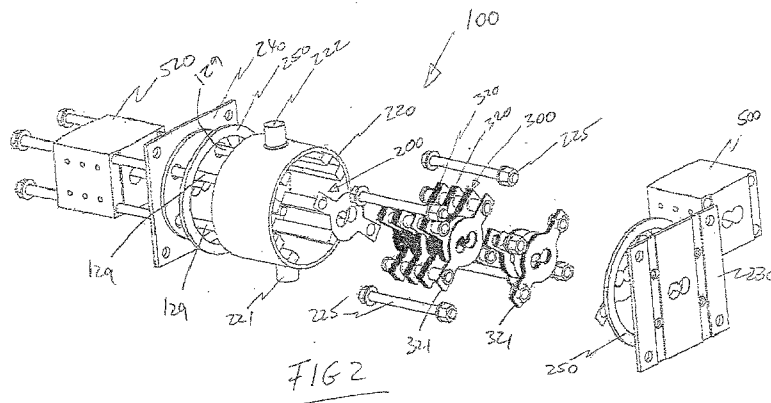
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(57) Abstract: A solid/fluid separation module and pretreatment apparatus and method enables pretreatment of biomass at high temperature and pressure with the ability to vary residence and processing times.