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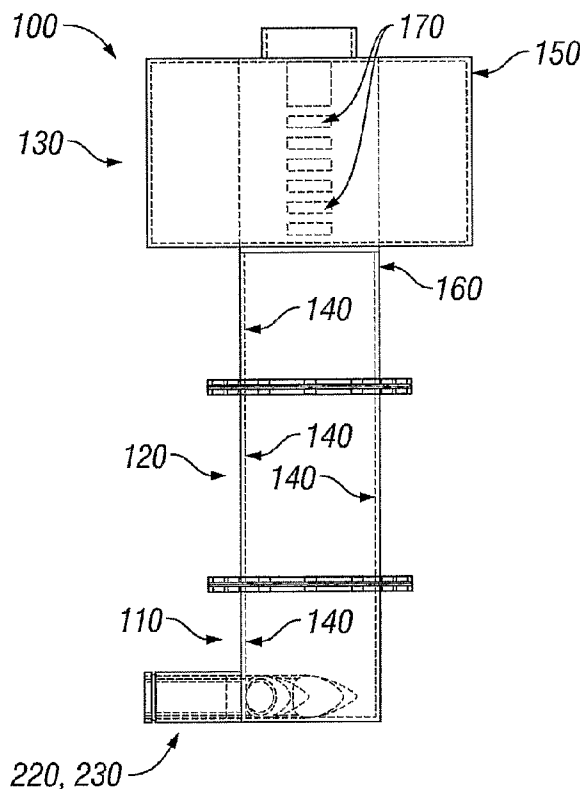
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(54) Title: DRY POLYMER HYDRATION APPARATUS AND METHODS OF USE



(57) Abstract: Disclosed are apparatus and methods for preparing wellbore viscous treatment gels from dry polymer and water. The apparatus includes an eductor (406) which slurries dry polymer with water, at least two input tubes (220, 230) wherein one input tube is connected with the eductor, and another to a water source. The apparatus also includes a mixing chimney (100) connected to the input tubes. The mixing chimney includes a lower input section (110) with inlets connected to the input tubes wherein a jet of metered dilution water is applied at high pressure to the incoming polymer-water slurry stream. This mixture is then accelerated in a circular, and preferably upward, motion where it is sheared against the wall of a central section (120) of the chimney, without the use of an impeller. The chimney further includes an output section (130) that comprising holes (170) circumferentially located, through which the mixture passes from the central section and into a hydration tank (418). The mixture exiting the chimney is polymer-water gel which is essentially fully mixed and de-aerated, and at least partially hydrated.



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