

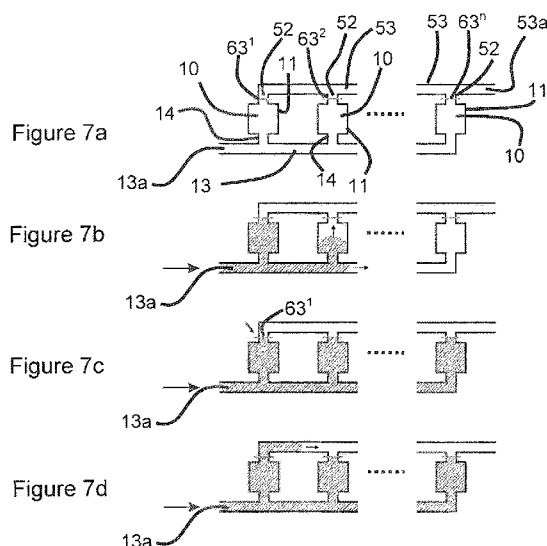


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[Continued on next page]

(54) **Title:** APPARATUS FOR AND METHODS OF PROCESSING LIQUIDS OR LIQUID-BASED SUBSTANCES

(57) **Abstract:** Apparatus for processing liquids or liquid-based substances includes a plurality of volumes at least two of which are defined at least in part by one or more phaseguides inside the volume and/or in a conduit connected thereto for controlling aliquoting of one or more liquids or liquid-based substances inside the volume. Each volume has an upstream and downstream side with respect to meniscus advancement direction via which it may be filled with or emptied of one or more liquids or liquid-based substances. The apparatus also includes at least one common upstream-side conduit connected to supply a liquid or liquid-based substance via a plurality of the inlet or extraction conduits, a plurality of the phaseguides exhibiting a predetermined level of stability and one or more of the phaseguides exhibiting a predetermined different stability compared with the stability of at least one of the other phaseguides whereby to control the preference order in which the volumes fill and/or empty. The stability is determined by the value and radius of an acute angle along a said phaseguide at the downstream side of the phaseguide.



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AMENDED CLAIMS

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1. Apparatus for processing liquids or liquid-based substances, the apparatus comprising a plurality of volumes at least two of which are defined at least in part by one or more phaseguides inside the volume and/or in a conduit connected thereto for controlling aliquoting of one or more liquids or liquid-based substances inside the volume, each volume having an upstream and downstream side with respect to a meniscus movement direction defined during filling of the volume with or emptying of the volume of one or more liquids or liquid-based substances, each volume having at least one upstream volume conduit, the apparatus including at least one common upstream-side conduit connected to supply a fluid, especially a liquid or liquid-based substance via a plurality of the upstream volume conduits, a plurality of the phaseguides exhibiting a predetermined level of stability and one or more of the phaseguides exhibiting a predetermined different stability compared with the stability of at least one of the other phaseguides whereby to control the preference order in which overflow of the phaseguides occurs during filling and/or emptying of at least one said volume; the said stability being determined by the value and radius of an acute angle subtended by a formation with the downstream side of a said phaseguide.
2. Apparatus according to Claim 1 wherein the formation is or includes a bend of the downstream-side phaseguide, a branch of the downstream-side phaseguide, an inlet into the downstream-side phaseguide or the intersection of the downstream-side phaseguide with a wall.
3. Apparatus in particular according to Claim 1 or Claim 2 and comprising a plurality of volumes at least two of which are defined at least in part by one or more phaseguides inside the volume for controlling aliquoting of one or more liquids or liquid-based substances inside the volume, each volume having at least two volume conduits, whereby to permit addition of at least two liquids to at least one said volume containing at least one phaseguide, each volume having an upstream and downstream side with respect to a meniscus movement direction defined during filling of the volume with or emptying of the volume of one or more liquids or liquid-based substances, the apparatus including at least one common upstream-side conduit connected to supply a fluid, especially a liquid or liquid-based substance via the plurality of volume conduits; the apparatus being operative to confine a first liquid or liquid-based substance in a said volume before permitting addition of a second said liquid or liquid-based substance.

AMENDED SHEET (ARTICLE 19)