CLAIMS

1. ~~An air separation column comprising a packing and a plate-style~~ liquid distributor having at least two adjacent troughs for distribution of a liquid to ~~the~~ a packing spaced apart from and located below the liquid distributor in a mass transfer column, the liquid distributor ~~said plate-style distributor~~ comprising:

at least one riser comprising at least one riser wall, wherein the at least one riser wall extends from a first surface of the liquid distributor in a first direction of the column;

at least one shield, wherein the at least one shield extends from a second surface of the liquid distributor opposite the first surface and extending in a second direction of the column opposite the first direction; and

at least two spaced apart rows of ~~one~~ liquid distribution apertures in each of the two adjacent troughs, each of said rows extending substantially across a trough length and each of said liquid distribution apertures extending from the first surface of the liquid distributor through the second surface of the liquid distributor,

wherein the at least one shield has a length extending in the second direction such that a gap is created between the at least one shield and the packing, and wherein the height of the gap between the shield and the packing is about 10 mm to 75 mm.

2. The liquid distributor of claim 1, wherein the mass transfer column is an air separation column.

3. The ~~air separation column~~liquid distributor ~~2.~~ of claim 1, wherein the packing is structured packing.

~~4~~3. The liquid distributor ~~air separation column~~ of claim 1, wherein the height of the gap between the shield and the packing is about 40 mm to 50 mm.

~~5~~4. The liquid distributor ~~air separation column~~ of claim 1, wherein the at least one shield is positioned such that the at least one shield extends from the second surface equidistant from the at least one liquid distribution aperture and the at least one riser.

~~6~~5. The liquid distributor ~~air separation column~~ of claim 1, wherein the at least one shield is positioned such that the at least one shield extends from the second surface directly adjacent to the at least one riser.

~~7~~6. The liquid distributor ~~air separation column~~ of claim 1, wherein the at least one riser extends substantially across the entire cross-section of the mass transfer column

in a third direction perpendicular to the first direction and the second direction, and wherein the at least one shield extends across the entire cross-section of the mass transfer column in the third direction.

8~~7~~. The liquid distributor ~~air separation column~~ of claim 1, wherein the at least one riser extends substantially across the entire cross-section of the mass transfer column in a third direction perpendicular to the first direction and the second direction, and wherein the at least one shield extends substantially across the entire cross-section of the mass transfer column in the third direction.

~~8. The air separation column of claim 1, wherein the at least one liquid distribution aperture is located between the at least one shield and an outer wall of the column.~~

~~9. The air separation column of claim 1, wherein the at least one liquid distribution aperture is located at a bottom of the liquid distributor and the at least one shield extends in the second direction from the bottom of the liquid distributor.~~

~~10. A method for the distribution of a liquid in an air separation column, comprising the steps of:~~

~~a. introducing the liquid into an upper portion of the air separation column;~~

~~b. positioning within the air separation column at least one air separation column section;~~

~~c. positioning within the at least one air separation column section a plate-style liquid distributor to receive a downwardly flowing stream of liquid and an upwardly flowing stream of vapor, the liquid distributor comprising:~~

~~i. at least one riser comprising at least one riser wall, wherein the at least one riser wall extends upwardly from a first surface of the liquid distributor;~~

~~ii. at least one shield, wherein the at least one shield extends from a second surface of the liquid distributor opposite the first surface and extending downwardly; and~~

~~iii. at least one liquid distribution aperture extending from the first surface of the liquid distributor through the second surface of the liquid distributor,~~

~~wherein the at least one shield has a length extending downwardly such that a gap is created between the at least one shield and a packing positioned below the liquid~~

~~distributor in the air separation column, and wherein the height of the gap between the shield and the packing is about 10 mm to 75 mm,~~

~~d. collecting the downwardly flowing stream of liquid from the upper portion of the air separation column on the first surface of the liquid distributor;~~

~~e. passing the upwardly flowing stream of vapor from the lower portion of the air separation column through the risers of the liquid distributor; and~~

~~f. distributing the downwardly flowing stream of liquid from at least one liquid distribution aperture in the liquid distributor on to the packing.~~

~~11. The method of claim 10, wherein the packing is structured packing.~~

~~12. The method of claim 10, wherein the height of the gap between the shield and the packing is about 40 mm to 50 mm.~~

~~13. The method of claim 10, wherein the at least one shield is positioned such that the at least one shield extends from the second surface equidistant from the at least one liquid distribution aperture and the at least one riser.~~

~~14. The method of claim 10, wherein the at least one shield is positioned such that the at least one shield extends from the second surface directly adjacent to the at least one riser.~~

~~15. The method of claim 10, further comprising:~~

~~g. creating a static pressure zone located between the at least one shield wall and an outer wall of the air separation column, the static pressure zone having a lower vapor velocity than the at least one vapor riser and the at least one liquid distribution aperture being located between the at least one shield and the outer wall.~~