CLAIMS

[Claim 1] A contacting device subassembly for the countercurrent contacting of a solid and liquid phase or a liquid and vapor phase, said contacting device subassembly comprising:

a first grid formed of a first set of spaced-apart and parallel-extending deflector blades;

a second grid formed of a second set of spaced-apart and parallel-extending deflector blades that are interleaved with and cross the first set of deflector blades at a preselected angle, the deflector blades in the first and second sets each having opposed ends and side edges;

a third grid formed of a third set of spaced-apart and parallel-extending deflector blades; and

a fourth grid formed of a fourth set of spaced apart and parallel-extending deflector blades that are interleaved with and cross the third set of deflector blades at a preselected angle, adjacent ones of the interleaved deflector blades in the third and fourth sets each having opposed ends and side edges, the side edges having uncut portions that join the adjacent ones of the interleaved deflector blades along a transverse strip where the deflector blades cross and cut portions that extend from the uncut portions to the opposed ends of the deflector blades, the deflector blades in the fourth grid each having a bent portion that places segments of the deflector blade on opposite sides of the uncut portion in offset planes,

wherein one of the ends in at least some of the deflector blades in the first set is uncut and is interconnected with an uncut one of the ends of the deflector blades in the third set along a reverse bend that aligns the first and second grids of deflector blades with the third and fourth grids of deflector blades; and

a transverse strip formed by uncut portions of the side edges of adjacent ones of the deflector blades and located where the deflector blades cross,

wherein if the transverse strip is located where the deflector blades cross, the deflector blades of the first and/or second sets of deflector blades include apertures and directional tabs associated with the apertures.

[Claim 2] The contacting device subassembly of claim 1, wherein the directional tabs have an uncut edge connecting the directional tabs to the deflector blades of the first and/or second sets of deflector blades.

[Claim 3] The contacting device subassembly of claim 1, wherein the directional tabs are welded to the deflector blades of the first and/or second sets of deflector blades in spaced and at least partially covering relationship to the apertures.

[Claim 4] The contacting device subassembly of claim 1, wherein the directional tabs extend upwardly or downwardly at an angle in the range of 5 to 65 degrees from a plane of the deflector blades in the first and/or second sets of deflector blades.

[Claim 5] The contacting device subassembly of claim 1, wherein the transverse strip is located where the deflector blades cross and wherein the side edges of the deflector blades include cut portions that extend from the uncut portions to the opposed ends of the deflector blades, the deflector blades in the second grid each having a bent portion that places segments of the deflector blade on opposite sides of the uncut portion in offset planes.

[Claim 6] The contacting device subassembly of claim 1, wherein the offset planes of the segments of the deflector blades in the second set are parallel to each other and the offset planes of the segments of the deflector blades in the fourth set are parallel to each other.

[Claim 7] The contacting device subassembly of claim 6, wherein one of the ends in each of the deflector blades in the second set is spaced apart from and aligned with one of the ends in each of the deflector blades in the fourth set.

[Claim 8] The contacting device subassembly of claim 6, wherein the first, second, third and fourth grids have a least one side shaped to conform to a curved longitudinal plane.

[Claim 9] The contacting device subassembly of claim 1, wherein the cut portions of the side edges joining the adjacent ones of the deflector blades in the first, second, third and fourth sets are each linear.

[Claim 10] The contacting device subassembly of claim 6, wherein the first and second grids cross at an included angle within the range of 45 to 135 degrees and the third and fourth grids cross at an included angled within the range of 45 to 135 degrees.

[Claim 11] The contacting device subassembly of claim 6, wherein said one of the ends of each of the deflector blades in the first set is uncut and is interconnected with an uncut one of the ends of the deflector blades in the third set along a reverse bend.

[Claim 12] A contacting device subassembly for the countercurrent contacting of a solid and liquid phase or a liquid and vapor phase, said contacting device subassembly comprising:

a first grid formed of a first set of spaced-apart, parallel-extending, planar deflector blades;

a second grid formed of a second set of spaced-apart, parallel-extending, planar deflector blades that are interleaved with and cross the first set of deflector blades at an included angle within the range of 45 to 135 degrees, adjacent ones of the interleaved deflector blades in the first and second sets each having opposed ends and linear side edges, the side edges having uncut portions that join the adjacent ones of the interleaved deflector blades along a transverse strip where the deflector blades cross and cut portions that extend from the uncut portions to the opposed ends of the deflector blades, the deflector blades in the second grid each having a bent portion that places segments of the deflector blade on opposite sides of the uncut portion in offset planes;

a third grid formed of a third set of spaced-apart, parallel-extending, planar deflector blades;

a fourth grid formed of a fourth set of spaced apart, parallel-extending, planar deflector blades that are interleaved with and cross the third set of deflector blades at an included angle within the range of 45 to 135 degrees, adjacent ones of the interleaved deflector blades in the third and fourth sets each having opposed ends and linear side edges, the side edges having uncut portions that join the adjacent ones of the interleaved deflector blades along a transverse strip where the deflector blades cross and cut portions that extend from the uncut portions to the opposed ends of the deflector blades, the deflector blades in the fourth grid each having a bent portion that places segments of the deflector blade on opposite sides of the uncut portion in offset planes that are parallel to each other; and

apertures formed in the deflector blades of the first and/or second sets of deflector blades and directional tabs associated with the apertures,

wherein one of the ends in at least some of the deflector blades in the first set is uncut and is interconnected with an uncut one of the ends of the deflector blades in the third set along a reverse bend that aligns the first and second grids of deflector blades with the third and fourth grids of deflector blades,

wherein one of the ends in each of the deflector blades in the second set is spaced apart from and aligned with one of the ends in each of the deflector blades in the fourth set,

wherein the first, second, third and fourth grids have a least one side shaped to conform to a curved longitudinal plane.

[Claim 13] A contacting device for the countercurrent contacting of a solid and a liquid phase or a liquid and a vapor phase, said contacting device comprising:

a first grid formed of a first set of spaced-apart and parallel-extending deflector blades;

a second grid formed of a second set of spaced-apart and parallel-extending deflector blades that are interleaved with and cross the first set of deflector blades at a preselected angle, adjacent ones of the interleaved deflector blades in the first and second set each having opposite ends and opposite side edges, the side edges having portions that join the adjacent ones of the interleaved deflector blades along a transverse strip where the deflector blades cross;

a third grid formed of a third set of spaced-apart and parallel-extending deflector blades;

a fourth grid formed of a fourth set of spaced apart and parallel-extending deflector blades that are interleaved with and cross the third set of deflector blades at a preselected angle, adjacent ones of the interleaved deflector blades in the third and fourth sets each having opposed ends and side edges, the side edges having uncut portions that join the adjacent ones of the interleaved deflector blades along another one of the transverse strips where the deflector blades cross and cut portions that extend from the uncut portions to the opposed ends of the deflector blades, the deflector blades in the fourth grid each having a bent portion that places segments of the deflector blade on opposite sides of the uncut portion in offset planes; and

apertures formed in the deflector blades of the first and/or second sets of deflector blades and directional tabs associated with the apertures,

wherein the side edge portions that join the adjacent ones of the interleaved deflector blades along the transverse strip where the deflector blades cross are uncut and wherein cut portions extend from the uncut portions to the opposite ends of the deflector blades, the

deflector blades in the second grid each having a bent portion that places segments of the deflector blade on opposite sides of the uncut portion in offset planes, and

wherein one of the ends in at least some of the deflector blades in the first set is uncut and is interconnected with an uncut one of the ends of the deflector blades in the third set along a reverse bend that aligns the first and second grids of deflector blades with the third and fourth grids of deflector blades.

[Claim 14] The contacting device of claim 13, wherein the directional tabs associated with some of the apertures extend upwardly from deflector blades of the first and/or second sets of deflector blades and the directional tabs associated with others of the apertures extend downwardly from deflector blades of the first and/or second sets of deflector blades.

[Claim 15] The contacting device of claim 13, wherein said one of the ends of each of the deflector blades in the first set is uncut and is interconnected with an uncut one of the ends of the deflector blades in the third set along a reverse bend.