CLAIMS

What is claimed is:

1. A contact tray for use in a mass transfer column, said contact tray comprising:

a generally planar tray deck; and

a plurality of valves distributed across the tray deck, each of said valves comprising an opening that extends through the tray deck to allow for passage of fluid through the tray deck, a weir extending upwardly from the tray deck around a perimeter of the opening, and a valve cover supported by attachment legs above said opening and said weir,

wherein said valve cover extends outwardly beyond the entire perimeter of said opening and has a downwardly extending perimeter region encompassing an entire perimeter of said valve cover.

2. The contact tray as set forth in claim 1, wherein said attachment legs comprise first and second attachment legs aligned at opposite ends of said valve cover.

3. The contact tray as set forth in claim 2, wherein said valves are fixed valves and said attachment legs support said valve cover at a fixed location above said opening and said weir.

4. The contact tray as set forth in claim 2, wherein each of said attachment legs extends through a slot in said tray deck and includes a shoulder that engages against an upper surface of said tray deck and a tab that has an upper surface spaced a preselected distance from said shoulder that engages against an under surface of said tray deck, wherein said preselected distance between said shoulder and said upper surface of the tab is selected to prevent vertical movement of said attachment legs and valve cover when the shoulders of the attachment legs engage the upper surface of the tray deck and said upper surfaces of said tabs engage against the under surface of the tray deck.

5. The contact tray as set forth in claim 2, wherein each of said attachment legs extends through and is vertically moveable within a slot in said tray deck to allow said valve cover to move between lowered and raised vertical positions, wherein each of said attachment legs includes a tab that has an upper surface that engages against an under surface of said tray deck to prevent further vertical movement of the attachment leg when the valve cover is in the raised vertical position.

6. The contact tray as set forth in claim 5, wherein an under surface of said tray cover contacts said weir when the valve cover is in the lowered position.

7. The contact tray as set forth in claim 1, wherein said opening is circular and said valve cover is in the form of an isosceles trapezoid with said attachment legs comprising first and second attachment legs respectively connected to opposed parallel first and second ends of said valve cover.

8. The contact tray as set forth in claim 7, wherein said first attachment leg is wider than said largest dimension of the opening.

9. The contact tray as set forth in claim 1, wherein said second attachment leg has a vent opening formed therein, and a louver overhanging said vent opening.

10. A contact tray for use in a mass transfer column, said contact tray comprising:

a generally planar tray deck; and

a plurality of valves distributed across the tray deck, each of said valves comprising an opening that extends through the tray deck to allow for passage of fluid through the tray deck, a weir extending upwardly from the tray deck around an entire perimeter of the opening, a valve cover supported above said opening and said weir by first and second attachment legs positioned at opposite ends of said valve cover, and a vent opening formed in one of said attachment legs,

wherein said valve cover extends outwardly beyond the entire perimeter of said opening and has a downwardly extending perimeter region encompassing an entire perimeter of said valve cover.

11. The contact tray as set forth in claim 10, wherein said valves are fixed valves and said first and second attachment legs support said valve cover at a fixed location above said opening and said weir.

12. The contact tray as set forth in claim 11, wherein each of said attachment legs extends through a slot in said tray deck and includes a shoulder that engages against an upper surface of said tray deck and a tab that has an upper surface spaced a preselected distance from said shoulder that engages against an under surface of said tray deck, wherein said preselected distance between said shoulder and said upper surface of the tab is selected to prevent vertical movement of said attachment legs and valve cover when the shoulders of the attachment legs engage the upper surface of the tray deck and said upper surfaces of said tabs engage against the under surface of the tray deck.

13. The contact tray as set forth in claim 10, wherein each of said attachment legs extends through and is vertically moveable within a slot in said tray deck to allow said valve cover to move between lowered and raised vertical positions, wherein each of said attachment legs includes a tab that has an upper surface that engages against an under surface of said tray deck to prevent further vertical movement of the attachment leg when the valve cover is in the raised vertical position.

14. The contact tray as set forth in claim 13, wherein an under surface of said tray cover contacts said weir when the valve cover is in the lowered position.

15. The contact tray as set forth in claim 10, wherein said opening is circular and said valve cover is in the form of an isosceles trapezoid with said attachment legs comprising first and

second attachment legs respectively connected to opposed parallel first and second ends of said valve cover.

16. The contact tray as set forth in claim 15, wherein said first attachment leg is wider than said largest dimension of the opening.

17. A contact tray for use in a mass transfer column, said contact tray comprising:

a generally planar tray deck; and

a plurality of valves distributed across the tray deck, each of said valves comprising an opening that extends through the tray deck to allow for passage of fluid through the tray deck, a weir extending upwardly from the tray deck around an entire perimeter of the opening, a valve cover supported above said opening and said weir by first and second attachment legs positioned at opposite ends of said valve cover, and a vent opening formed in one of said attachment legs,

wherein said opening is circular and said valve cover is in the form of an isosceles trapezoid with said attachment legs comprising first and second attachment legs respectively connected to opposed parallel first and second ends of said valve cover,

wherein said valve cover has a downwardly extending perimeter region encompassing an entire perimeter of said valve cover, and said valve cover extends outwardly beyond the entire perimeter of the opening,

wherein said first attachment leg has a width greater than a largest width of the opening.

18. The contact tray as set forth in claim 17, wherein each of said attachment legs extends through a slot in said tray deck and includes a shoulder that engages against an upper surface of said tray deck and a tab that has an upper surface spaced a preselected distance from said shoulder that engages against an under surface of said tray deck, wherein said preselected distance between said shoulder and said upper surface of the tab is selected to prevent vertical movement of said attachment legs and valve cover when the shoulders of the attachment legs

engage the upper surface of the tray deck and said upper surfaces of said tabs engage against the under surface of the tray deck.

19. The contact tray as set forth in claim 17, wherein each of said attachment legs extends through and is vertically moveable within a slot in said tray deck to allow said valve cover to move between lowered and raised vertical positions, wherein each of said attachment legs includes a tab that has an upper surface that engages against an under surface of said tray deck to prevent further vertical movement of the attachment leg when the valve cover is in the raised vertical position.

20. The contact tray as set forth in claim 19, wherein an under surface of said tray cover contacts said weir when the valve cover is in the lowered position.