CLAIMS

1. An apparatus for separating solids from solids laden drilling fluid and sizing the solids, the apparatus comprising a basket (312), a vibratory mechanism (314), a first screen deck (318b) and a second screen deck (318c) mounted below said first screen deck and a directing device for selecting a parallel or series mode of operation in which flow of solids laden drilling fluid is divided between the first deck and the second deck and a series mode of operation in which solids laden drilling fluid is directed on to the first screen deck and then drilling fluid screened thereby is directed on to said second screen deck wherein the apparatus further comprises a moveable diverter tray for selecting parallel or series mode of operation.

2. An apparatus as claimed in Claim 1, wherein said moveable diverter tray (320) is slideably arranged in rails (320a).

3. An apparatus as claimed in Claim 2, wherein said rails comprise an expandable element (320p,320s) to selectively fix said moveable diverter tray (320) in said rails (320a).

4. An apparatus as claimed in any preceding claim, wherein said moveable diverter tray (320) is arranged between said first screen deck (318b) and said second screen deck (318c).

5. An apparatus as claimed in any preceding claim, wherein a flow tray (317b) is arranged between said first screen deck (318b) and said second screen deck (318c) and said moveable diverter tray (320) forms part of the flow tray (317b).

6. An apparatus as claimed in any preceding claim, wherein the first screen deck (318b) is arranged at an

uphill angle from a feed end to a discharge end of the basket (312), the first screen deck comprising a weir (313), such that upon a pond forming on said first screen deck (318b) and reaching a predetermined depth, solids laden drilling fluid may discharge over said weir (313).

7. An apparatus as claimed in Claim 6, further comprising a channel (311) to direct flow of solids laden drilling fluid from said weir (313) to said second screen deck (318c).

8. An apparatus as claimed in Claim 6 or 7, wherein said weir is provided with a ledge (487a) to inhibit solids passing thereover.

9. An apparatus as claimed in any preceding claim, further comprising a scalping screen deck (318a).

10. An apparatus as claimed in Claim 9, further comprising a flow tray (317a) for directing scalped solids laden drilling fluid on to a feed end of said first screen deck (318b).

11. An apparatus as claimed in any preceding claim wherein said diverter tray (320) has a duct (326) therebelow for directing screened solids laden drilling fluid on to the second screen deck, such that when the diverter tray is retracted, screened solids laden drilling fluid flows through said duct (326) on to said second screen deck (318c).

12. An apparatus as claimed in any of Claims 1 to 10, wherein said diverter tray (320) has a duct (471) therebelow for directing screened solids laden drilling fluid into a sump (456), such that when the diverter tray (320) is retracted, screened solids laden drilling fluid flows through said duct (326) into said sump (456).

13. An apparatus for separating solids from solids laden drilling fluid and sizing the solids, the apparatus

comprising a basket (312), a vibratory mechanism (314), a first screen deck (318b) and a second screen deck (318c) mounted below said first screen deck and a directing device for selecting a parallel or series mode of operation in which flow of solids laden drilling fluid is divided [split] between the first deck and the second deck and a series mode of operation in which [all/most of the] solids laden drilling fluid is directed on to the first screen deck and then drilling fluid screened thereby is directed on to said second screen deck wherein the apparatus further comprises a moveable plate (390,439) or duct (391,441) for selecting parallel or series mode of operation.

14. An apparatus as claimed in Claim 13, wherein said plate is solid.

15. An apparatus as claimed in Claim 13, wherein said plate has at least one aperture therein.

16. An apparatus as claimed in Claim 13, 14 or 15, wherein said duct (391,441) comprises a plate with an aperture therein.

17. An apparatus as claimed in any preceding claim, wherein said first and second screen decks (318b,318c) comprise screens having the same screen mesh size.

18. An apparatus as claimed in any one of Claims 1 to 16, wherein said first and second screen decks (318b,318c) comprise screens having the different screen mesh size.

19. A method for separating solids from solids laden drilling fluid and selectively sizing the solids, the apparatus comprising a basket (312), a vibratory mechanism (314), a first screen deck (318b) and a second screen deck (318c) mounted below said first screen deck and a directing device for selecting a parallel or series

mode of operation in which flow of solids laden drilling fluid is divided between the first deck and the second deck and a series mode of operation in which solids laden drilling fluid is directed on to the first screen deck and then drilling fluid screened thereby is directed on to said second screen deck wherein the method further comprises the step of moving a moveable diverter tray for selecting parallel or series mode of operation.

20. A method for separating solids from solids laden drilling fluid and selectively sizing the solids, the apparatus comprising a basket (312), a vibratory mechanism (314), a first screen deck (318b) and a second screen deck (318c) mounted below said first screen deck and a directing device for selecting a parallel or series mode of operation in which flow of solids laden drilling fluid is divided between the first deck and the second deck and a series mode of operation in which solids laden drilling fluid is directed on to the first screen deck and then drilling fluid screened thereby is directed on to said second screen deck wherein the method further comprises the step of moving a moveable plate (390,439) or duct (391,441) for selecting parallel or series mode of operation.

CLAIMS

1. A system, comprising:

a vibratable basket that is adapted to receive a flow of material comprising a mixture of drilling fluid and solids material;

a plurality of spaced-apart screen assemblies comprising a first screen assembly and a second screen assembly positioned below said first screen assembly, wherein each of said plurality of spaced-apart screen assemblies is mounted in and vibratable with said vibratable basket, and wherein each of said plurality of spaced-apart screen assemblies is adapted to allow a flow of at least a portion of said drilling fluid to pass therethrough; and

a conversion apparatus that is adapted to selectively control said flow of said material passing through said system so as to generate one of a series flow and a parallel flow to said first and second screen assemblies, wherein said conversion apparatus comprises a slidably movable diverter that is slidably mounted in said vibratable basket below said first screen assembly and above said second screen assembly, said slidably movable diverter being adapted to control at least a portion of said flow of said material from said first screen assembly to said second screen assembly by being slidably moved between said first and second screen assemblies.

2. The system of claim 1, further comprising a system flow channel positioned below said first screen assembly.

3. The system of claim 2, wherein said slidably movable diverter is adapted to generate said series flow by being slidably moved to allow material passing through said first screen assembly to enter said system flow channel and flow to said second screen assembly, and wherein said slidably movable diverter is further adapted to generate said parallel flow by being slidably moved to block material passing through said first screen assembly from entering said system flow channel and flowing to said second screen assembly.

4. The system of claim 2, wherein said conversion apparatus further comprises a holding structure positioned above said second screen assembly, said holding structure comprising spaced-apart rails that are adapted to allow slidable movement of said slidably movable diverter, wherein said slidably movable diverter is slidably mounted between said spaced-apart rails and comprises a handle apparatus that is adapted to slidably move said slidably movable diverter relative to said system flow channel.

5. The system of claim 4, further comprising a clamping apparatus that is adapted to hold said slidably movable diverter in said holding structure.

6. The system of claim 2, wherein said slidably movable diverter comprises a body, said body comprising a blocking portion and at least one flow channel through said body.

7. The system of claim 6, wherein said slidably movable diverter is adapted to generate said series flow by being slidably moved so that said blocking portion blocks material passing through said first screen assembly from entering said system flow channel, and wherein said slidably movable diverter is further adapted to generate said parallel flow by being slidably moved so that said at least one flow channel through said body is positioned to allow material passing through said first screen assembly to enter said system flow channel and bypass said second screen assembly.

8. The system of claim 7, further comprising a parallel flow channel adjacent to said first screen assembly, wherein said at least one flow channel through said body comprises at least one first flow opening and at least one second flow opening, and wherein said slidably movable diverter is further adapted to generate said parallel flow by being slidably moved so as to substantially align said at least one first flow opening with said parallel flow channel and to substantially align said at least one second flow opening with said system flow channel.

9. The system of claim 2, further comprising a flowback apparatus positioned below said first screen assembly that is adapted to direct material passing through the first screen assembly to said system flow channel.

10. The system of claim 2, wherein said slidably movable diverter is adapted to generate said parallel flow by being slidably moved to a parallel flow configuration to allow material passing through said first screen assembly to enter said system flow channel and bypass said second screen assembly, and wherein said slidably movable diverter is further adapted to generate said series flow by being slidably moved to a series flow configuration to block material passing through said first screen assembly from entering said system flow channel and bypassing said second screen assembly.

11. The system of claim 1, wherein said conversion apparatus further comprises a weir adjacent to said first screen assembly, said weir being adapted to maintain a pool of said mixture of drilling fluid and solids material on said first screen assembly.

12. The system of claim 11, further comprising a parallel flow channel adjacent to said first screen assembly that is adapted to direct a flow of said mixture from said pool of drilling fluid and solids material on said first screen assembly to said second screen assembly, said directed flow of said mixture bypassing said first screen assembly during said parallel flow of said system.

13. The system of claim 1, further comprising a sump positioned below said second screen assembly that is adapted to receive a flow of said drilling fluid passing through said plurality of spaced-apart screen assemblies.

14. The system of claim 1, wherein said first screen assembly comprises a scalping screen.

15. The system of claim 1, wherein said second screen assembly comprises a screen material having a screen mesh size that is adapted to remove solids

material having a size that is approximately the same that of lost circulation material.

16. The system of claim 1, wherein said slidably movable diverter comprises a flow chute at an overflow end thereof, wherein an entirety of said flow chute is adapted to be positioned below said first screen assembly and above said second screen assembly at least when said slidably movable diverter is slidably retracted to a fully retracted position.

17. The system of claim 16, wherein said slidably movable diverter is adapted to generate series flow between said first and second screen assemblies when said slidably movable diverter is slidably retracted.

18. The system of claim 1, wherein said slidably movable diverter is slidably mounted in a substantially horizontal plane.

19. The system of claim 18, wherein said slidably movable diverter is adapted to be slidably moved between said first and second screen assemblies in said substantially horizontal plane.

20. The system of claim 1, wherein said slidably movable diverter is slidably mounted in a plane that is substantially aligned with a plane of at least one of said first and second screen assemblies.

21. The system of claim 20, wherein said slidably movable diverter is adapted to be slidably moved between said first and second screen assemblies in said plane that is substantially aligned with said plane of at least said one of said first and second screen assemblies.

22. The system of claim 21, wherein said slidably movable diverter comprises a blocking portion that is adapted to facilitate series flow between said first and second screen assemblies and a flow channel portion that is adapted to facilitate parallel flow between said first and second screen assemblies.

23. The system of claim 22, wherein positions of said blocking portion and said flow channel portion of said slidably movable diverter are adapted to be reversed relative to a system flow channel of said system when said slidably movable diverter is slidably moved to change a flow configuration of said system between series flow and parallel flow.

24. A system, comprising:

a vibratable basket that is adapted to receive a flow of material comprising a mixture of drilling fluid and solids material;

a plurality of spaced-apart screen assemblies comprising a first screen assembly and a second screen assembly positioned below said first screen assembly, wherein each of said plurality of spaced-apart screen assemblies is mounted in and vibratable with said vibratable basket, and wherein each of said plurality of spaced-apart screen assemblies is adapted to allow a flow of at least a portion of said drilling fluid to pass therethrough;

a system flow channel positioned below said first screen assembly; and

a conversion apparatus that is adapted to selectively control said flow of said material passing through said system, said conversion apparatus comprising a slidably movable diverter that is slidably mounted in said vibratable basket in a substantially horizontal plane, said slidably movable diverter being adapted to generate series flow between said first and second screen assemblies by being slidably moved between said first and second screen assemblies in said substantially horizontal plane to a series flow position to allow material passing through said first screen assembly to enter said system flow channel and flow to said second screen assembly, said slidably movable diverter being further adapted to generate parallel flow to said first and second screen assemblies by being slidably moved between said first and second screen assemblies in said substantially horizontal plane to a parallel flow position to block material passing through said first screen assembly from entering said system flow channel and flowing to said second screen assembly.

25. A system, comprising:

a vibratable basket that is adapted to receive a flow of material comprising a mixture of drilling fluid and solids material;

a plurality of spaced-apart screen assemblies comprising a first screen assembly and a second screen assembly positioned below said first screen assembly, wherein each of said plurality of spaced-apart screen assemblies is mounted in and vibratable with said vibratable basket, and wherein each of said plurality of spaced-apart screen assemblies is adapted to allow a flow of at least a portion of said drilling fluid to pass therethrough;

a system flow channel positioned below said first screen assembly; and

a conversion apparatus that is adapted to selectively control said flow of said material passing through said system, said conversion apparatus comprising a slidably movable diverter that is slidably mounted in said vibratable basket in a diverter mounting plane that is substantially aligned with at least one of said first and second screen assemblies, said slidably movable diverter being adapted to generate parallel flow to said first and second screen assemblies by being slidably moved between said first and second screen assemblies in said diverter mounting plane to a parallel flow configuration to allow material passing through said first screen assembly to enter said system flow channel and bypass said second screen assembly, said slidably movable diverter being further adapted to generate series flow between said first and second screen assemblies by being slidably moved between said first and second screen assemblies in said substantially horizontal plane to a series flow configuration to block material passing through said first screen assembly from entering said system flow channel and bypassing said second screen assembly.