WHAT IS CLAIMED IS:

1. A variable flow resistance system for use in a subterranean well, the system comprising:

a flow chamber through which a fluid composition flows, the chamber having at least one inlet, an outlet, and at least one structure spirally oriented relative to the outlet, whereby the structure induces spiral flow of the fluid composition about the outlet.

2. The system of claim 1, wherein the fluid composition flows through the flow chamber in the well.

3. The system of claim 1, wherein the structure impedes a change in direction of flow of the fluid composition radially toward the outlet.

4. The system of claim 3, wherein the structure increasingly impedes the change in direction radially toward the outlet in response to at least one of a) increased velocity of the fluid composition, b) decreased viscosity of the fluid composition, and c) a reduced ratio of desired fluid to undesired fluid in the fluid composition.

5. The system of claim 1, wherein the structure comprises at least one of a vane and a recess.

6. The system of claim 1, wherein the structure projects at least one of inwardly and outwardly relative to a wall of the chamber.

7. The system of claim 1, wherein the at least one structure comprises multiple spaced apart structures.

8. The system of claim 7, wherein a spacing between adjacent structures decreases in a direction of spiral flow of the fluid composition.

9. The system of claim 1, wherein the fluid composition flows more directly from the inlet to the outlet as a viscosity of the fluid composition increases.

10. The system of claim 1, wherein the fluid composition flows more directly from the inlet to the outlet as a velocity of the fluid composition decreases.

11. The system of claim 1, wherein the fluid composition flows more directly from the inlet to the outlet as a ratio of desired fluid to undesired fluid in the fluid composition increases.

12. A variable flow resistance system for use in a subterranean well, the system comprising:

a flow chamber including an outlet, at least one first structure which induces spiral flow of a fluid composition about the outlet, and at least one second structure which impedes a change in direction of flow of the fluid composition radially toward the outlet.

13. The system of claim 12, wherein the fluid composition flows through the flow chamber in the well.

14. The system of claim 12, wherein the second structure increasingly impedes the change in direction radially toward the outlet in response to at least one of a) increased velocity of the fluid composition, b) decreased viscosity of the fluid composition, and c) a reduced ratio of desired fluid to undesired fluid in the fluid composition.

15. The system of claim 12, wherein the first structure comprises at least one of a vane and a recess.

16. The system of claim 12, wherein the second structure comprises at least one of a vane and a recess.

17. The system of claim 12, wherein the first structure projects at least one of inwardly and outwardly relative to a wall of the chamber.

18. The system of claim 12, wherein the second structure projects at least one of inwardly and outwardly relative to a wall of the chamber.

19. The system of claim 12, wherein the at least one second structure comprises multiple spaced apart second structures.

20. The system of claim 12, wherein the at least one first structure comprises multiple spaced apart first structures.

21. The system of claim 20, wherein a spacing between adjacent first structures decreases in a direction of spiral flow of the fluid composition.

22. The system of claim 12, wherein the fluid composition flows more directly to the outlet as a viscosity of the fluid composition increases.

23. The system of claim 12, wherein the fluid composition flows more directly to the outlet as a velocity of the fluid composition decreases.

24. The system of claim 12, wherein the fluid composition flows more directly from to the outlet as a ratio of desired fluid to undesired fluid in the fluid composition increases.

WHAT IS CLAIMED IS:

1. A variable flow resistance system for use in a subterranean well, the system comprising:

a flow chamber through which a fluid composition flows, the chamber having at least one inlet, an outlet, and at least one structure spirally oriented relative to the outlet, whereby the structure induces spiral flow of the fluid composition about the outlet.

2. The system of claim 1, wherein the fluid composition flows through the flow chamber in the well.

3. The system of claim 1, wherein the structure impedes a change in direction of flow of the fluid composition radially toward the outlet.

4. The system of claim 3, wherein the structure increasingly impedes the change in direction radially toward the outlet in response to at least one of a) increased velocity of the fluid composition, b) decreased viscosity of the fluid composition, and c) a reduced ratio of desired fluid to undesired fluid in the fluid composition.

5. The system of claim 1, wherein the structure comprises at least one of a vane and a recess.

6. The system of claim 1, wherein the structure projects at least one of inwardly and outwardly relative to a wall of the chamber.

7. The system of claim 1, wherein the at least one structure comprises multiple spaced apart structures.

8. The system of claim 7, wherein a spacing between adjacent structures decreases in a direction of spiral flow of the fluid composition.

9. The system of claim 1, wherein the fluid composition flows more directly from the inlet to the outlet as a viscosity of the fluid composition increases.

10. The system of claim 1, wherein the fluid composition flows more directly from the inlet to the outlet as a velocity of the fluid composition decreases.

11. The system of claim 1, wherein the fluid composition flows more directly from the inlet to the outlet as a ratio of desired fluid to undesired fluid in the fluid composition increases.

12. A variable flow resistance system for use in a subterranean well, the system comprising:

a flow chamber including an outlet, at least one first structure which induces spiral flow of a fluid composition about the outlet, and at least one second structure which impedes a change in direction of flow of the fluid composition radially toward the outlet,

wherein the at least one first structure comprises multiple spaced apart first structures, and

wherein a spacing between adjacent first structures decreases in a direction of spiral flow of the fluid composition.

13. The system of claim 12, wherein the fluid composition flows through the flow chamber in the well.

14. The system of claim 12, wherein the second structure increasingly impedes the change in direction radially toward the outlet in response to at least one of a) increased velocity of the fluid composition, b) decreased viscosity of the fluid composition, and c) a reduced ratio of desired fluid to undesired fluid in the fluid composition.

15. The system of claim 12, wherein the first structure comprises at least one of a vane and a recess.

16. The system of claim 12, wherein the second structure comprises at least one of a vane and a recess.

17. The system of claim 12, wherein the first structure projects at least one of inwardly and outwardly relative to a wall of the chamber.

18. The system of claim 12, wherein the second structure projects at least one of inwardly and outwardly relative to a wall of the chamber.

19. The system of claim 12, wherein the at least one second structure comprises multiple spaced apart second structures.

20. The system of claim 12, wherein the fluid composition flows more directly to the outlet as a viscosity of the fluid composition increases.

21. The system of claim 12, wherein the fluid composition flows more directly to the outlet as a velocity of the fluid composition decreases.

22. The system of claim 12, wherein the fluid composition flows more directly from to the outlet as a ratio of desired fluid to undesired fluid in the fluid composition increases.