We claim:

1. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retrained in said open position.

2. The valve of claim **1**, wherein:

said insert is a shape integrated into a flapper base that is disposed in said recess and pivotally supports said flapper.

3. The valve of claim **1**, wherein:

said insert is spaced apart from a flapper base that is disposed in said recess and pivotally supports said flapper.

4. The valve of claim **1**, wherein:

said insert is wider adjacent a flapper base located in said recess than at an opposite end thereof.

5. The valve of claim **1**, wherein:

said insert comprises at least one ridge.

6. The valve of claim **5**, wherein:

said ridge comprises a plurality of aligned ridges oriented parallel, perpendicular or obliquely to the flow through said passage.

7. The valve of claim **4**, wherein:

said opposite end of said insert defines a sharp or blunt pointed end with side edges that taper away from each other in the flow direction through said passage with said flapper open.

8. The valve of claim **1**, wherein:

said insert comprises at least one internal opening.

9. The valve of claim **8**, wherein:

said opening has a quadrilateral shape.

10. The valve of claim **1**, wherein:

said insert is axially aligned with said flapper when said flapper is in said open position and occupies the balance of said recess circumferentially around said flapper when said flapper is in said open position.

11. The valve of claim **1**, wherein:

said flapper has at least one groove in its surface facing into said recess.

12. The valve of claim **1**, wherein:

said insert extends circumferentially in said recess for at least 180 degrees.

13. The valve of claim **1**, wherein:

said housing comprises a path starting from said passage and extending into said recess to direct pressure against said flapper that urges it toward said closed position.

14. The valve of claim **13**, wherein:

said flapper is selectively retained in said open position by a flow tube that covers an inlet to said path and uncovers said inlet on initial movement of said flow tube away from said flapper.

15. The valve of claim **1**, wherein:

said insert is wholly within said recess.

16. The valve of claim **1**, wherein:

said insert extends out of said recess and into said passage.

17. The valve of claim **1**, wherein:

said insert has a roughened surface that faces said passage.

We claim:

1. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess by a flow tube, said flapper defining the closed position by contacting said seat;

said recess defined by an enlarged dimension for said passage in said housing and said flapper selectively disposed within said recess when said flapper is retained by said flow tube, said recess extending circumferentially beyond said flapper and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper created by flow that would otherwise move said flapper toward said seat, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position by said flow tube.

2. The valve of claim **1**, wherein:

said insert is a shape integrated into a flapper base that is disposed in said recess and pivotally supports said flapper.

3. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position;

said insert is spaced apart from a flapper base that is disposed in said recess and pivotally supports said flapper.

4. The valve of claim **1**, wherein:

said insert is wider adjacent a flapper base located in said recess than at an opposite end thereof.

5. The valve of claim **1**, wherein:

said insert comprises at least one ridge.

6. The valve of claim **5**, wherein:

said ridge comprises a plurality of aligned ridges oriented parallel, perpendicular or obliquely to the flow through said passage.

7. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper **pivotally** mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position

said insert is wider adjacent a flapper base located in said recess than at an opposite end thereof;

said opposite end of said insert defines a sharp or blunt pointed end with side edges that taper away from each other in the flow direction through said passage with said flapper open.

8. The valve of claim **1**, wherein:

said insert comprises at least one internal opening.

9. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat

that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position;

said insert comprises at least one internal opening;

said opening has a quadrilateral shape.

10. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position;

said insert is axially aligned with said flapper when said flapper is in said open position and occupies the balance of said recess circumferentially around said flapper when said flapper is in said open position.

11. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise

raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position;

said flapper has at least one groove in its surface facing into said recess.

12. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position;

said insert extends circumferentially in said recess for at least 180 degrees.

13. The valve of claim **1**, wherein:

said housing comprises a path starting from said passage and extending into said recess to direct pressure against said flapper that urges it toward said closed position.

14. A valve for subterranean use in a tubular string, comprising:

a housing with end connections adapted for mounting the housing to the string;

a flapper pivotally mounted in a recess adjacent a passage in said housing, said passage extending between said ends, said flapper mounted on a pivot and biased to move toward a seat that surrounds said passage when said flapper is not selectively retained in said recess, said flapper defining the closed position by contacting said seat; and

an insert mounted at least in part in said recess said insert acting to at least reduce a flow induced vortex in said passage adjacent said flapper, said vortex, without said insert, otherwise raising pressure adjacent the flapper to a level that retains said flapper in said recess by overcoming said bias to said closed position when said flapper is not selectively retained in said open position;

said housing comprises a path starting from said passage and extending into said recess to direct pressure against said flapper that urges it toward said closed position;

said flapper is selectively retained in said open position by a flow tube that covers an inlet to said path and uncovers said inlet on initial movement of said flow tube away from said flapper.

15. The valve of claim **1**, wherein:

said insert is wholly within said recess.

16. The valve of claim **1**, wherein:

said insert extends out of said recess and into said passage.

17. The valve of claim **1**, wherein:

said insert has a roughened surface that faces said passage.