Claims

What is claimed is:

1. A valve assembly, comprising:

a valve housing; and

a handle that is movable about an actuation axis to actuate a valve actuator within the valve housing between an open position and a closed position;

wherein the handle has a first opening and the valve housing has a second opening, wherein when the valve actuator is in the closed position the first opening aligns with the second opening to enable receipt of a lockout member that prevents movement of the valve actuator from the closed position to the open position.

2. The valve assembly of claim 1, wherein when the valve actuator is in the open position the first opening is out of alignment with the second opening.

3. The valve assembly of claim 1, wherein the first and second openings extend transverse to the actuation axis.

4. The valve assembly of claim 3, wherein the first and second openings are oriented perpendicular to the actuation axis.

5. The valve assembly of claim 3, wherein the first and second openings are oriented at a non-zero angle relative to a horizontal plane perpendicular to the actuation axis.

6. The valve assembly of claim 5, wherein the non-zero angle is about 2.5 to 3 degrees.

7. The valve assembly of claim 1, wherein the valve actuator is a multi-turn actuator.

8. The valve assembly of claim 1, further comprising:

an indicator stem configured for slidable movement relative to the handle in response to movement of the handle;

wherein the indicator stem has a third opening, wherein when the valve actuator is in the closed position the first opening aligns with the third opening to enable receipt of the lockout member to prevent movement of the valve actuator from the closed position to the open position.

9. The valve assembly of claim 8, wherein when the valve actuator is in the open position the first opening is out of alignment with the third opening.

10. The valve assembly of claim 8, wherein when the valve actuator is in the open position the first and second openings are out of alignment with the third opening.

11. The valve assembly of claim 8, wherein when the valve actuator is in the open position the first opening is out of alignment with the second opening.

12. The valve assembly of claim 8, wherein the indicator stem has a cam that slides through a vertically extending opening in a wall of the handle as the handle moves to actuate the valve actuator between the closed position and the open position.

13. The valve assembly of claim 8, wherein the handle has a pair of first openings at opposite sides of the handle and the valve housing has a pair of second openings at opposite sides of the valve housing, and wherein when the valve actuator is in the closed position the pair of first openings, the pair of second openings, and the third opening are aligned to enable receipt of the lockout member.

14. The valve assembly of claim 1, wherein the first opening angularly aligns with the second opening about the actuation axis when the valve actuator is in the closed position.

15. The valve assembly of claim 1, wherein the position of the first opening when the valve actuator is in the open position is 90 degrees away from the position of the first opening when the valve actuator is in the closed position.

16. The valve assembly of claim 1, wherein the first opening axially aligns with the second opening along the actuation axis when the valve actuator is in the closed position.

17. The valve assembly of claim 1, wherein when the valve actuator is in the open position the first opening is axially above the second opening along the actuation axis.

18. The valve assembly of claim 1, wherein the valve actuator is a quarter turn actuator.

19. The valve assembly of claim 1, wherein the valve assembly can be locked out only when the valve actuator is in the closed position.

Claims

1. A valve assembly, comprising:

a valve housing; and

a handle that is movable about an actuation axis to actuate a valve actuator within the valve housing between an open position and a closed position;

wherein the handle has a first opening and the valve housing has a second opening, the second opening being located radially further from the actuation axis than the first opening, wherein when the valve actuator is in the closed position the first opening aligns with the second opening to enable receipt of a lockout member that prevents movement of the valve actuator from the closed position to the open position, wherein the valve assembly can be locked out only when the valve actuator is in the closed position;

wherein the first and second openings extend transverse to the actuation axis,

wherein the handle is axially and rotatably movable within an opening in the valve housing, and wherein a central axis of the first opening axially aligns with a central axis of the second opening along the actuation axis when the valve actuator is in the closed position, and wherein when the valve actuator is in the open position the central axis of the first opening is axially above the central axis of the second opening along the actuation axis.

2. The valve assembly of claim 1, wherein when the valve actuator is in the open position the first opening is out of alignment with the second opening.

3. The valve assembly of claim 1, wherein the first and second openings are oriented perpendicular to the actuation axis.

4. The valve assembly of claim 1, wherein the first and second openings are oriented at a non-zero angle relative to a horizontal plane perpendicular to the actuation axis.

5. The valve assembly of claim 4, wherein the non-zero angle is about 2.5 to 3 degrees.

6. The valve assembly of claim 1, wherein the handle has a pair of first openings at opposite sides of the handle and the valve housing has a pair of second openings at opposite sides of the valve housing, and wherein when the valve actuator is in the closed position the pair of first openings and the pair of second openings are aligned to enable receipt of the lockout member.

7. The valve assembly of claim 1, wherein the first opening angularly aligns with the second opening about the actuation axis when the valve actuator is in the closed position.

8. The valve assembly of claim 1, wherein the position of the first opening when the valve actuator is in the open position is 90 degrees away from the position of the first opening when the valve actuator is in the closed position.

9. The valve assembly of claim 1, wherein the valve actuator is a quarter turn actuator.

10. The valve assembly of claim 1, wherein the handle is configured such that turning the handle moves the valve actuator to a variety of open positions, and wherein when the valve actuator is in any one of the variety of open positions the first opening is axially above the second opening along the actuation axis.

11. A valve assembly according to claim 1, wherein a central body of the valve housing includes a lower housing and an upper housing, and the handle is axially and rotatably movable within an opening in the upper housing.

12. A valve assembly according to claim 1, wherein the valve assembly is configured such that turning the handle to close the valve assembly causes the handle

to move downward along the actuation axis and to rotate about the actuation axis and turning the handle to open the valve assembly causes the handle to move upward along the actuation axis and to rotate about the actuation axis.

13. The valve assembly of claim 12, wherein the downward movement of the handle along the actuation axis has the effect of axially lowering the opening in the handle to the actuation axis height of the opening in the valve housing.

14. The valve assembly of claim 13, wherein the rotational movement of the handle about the actuation axis has the effect of moving the opening in the handle into angular alignment with the opening in the valve housing.

15. The valve assembly of claim 12, wherein the upward movement of the handle along the actuation axis has the effect of raising the opening in the handle to above the actuation axis height of the opening in the valve housing.

16. The valve assembly of claim 15, wherein the rotational movement of the handle about the actuation axis has the effect of rotating the opening in the handle out of angular alignment with the opening in the valve housing.

17. The valve assembly of claim 16, wherein turning the handle to any open position has the effect of moving the opening in the handle out of axial and angular alignment with the opening in the valve housing, and with the openings out of axial and angular alignment the valve assembly cannot be locked by the lockout member.