CLAIMS

What is claimed is:

1. A rotary valve, comprising:

a valve body, which defines a valve stem opening;

a valve stem comprising an enlarged portion, said enlarged portion comprising a diameter greater than said valve stem opening to thereby secure said valve stem within said valve body by limiting radially outward movement of said valve stem with respect to said valve body;

a first set of split support elements comprising at least two separable sections which are mountable within said valve body from opposite sides of said valve body, when mounted within said valve body said first set of split support elements define a first opening therethrough;

a rotary member with a first extension, said first extension being positioned within said first opening defined within said first set of split support elements whereby said first extension is rotatable within said first opening, said first extension being interconnectable with said valve stem within said valve body, whereby said rotary member rotates in response to rotation of said valve stem.

2. The rotary valve of claim 1, further comprising a second set of split support elements comprising at least two separable sections which are mountable within said valve body from opposite sides of said valve body, when mounted within said valve body said second set of split support elements defining a second opening therethrough, a second extension on said rotary member positioned on an opposite side of said rotary member from said first extension, said second extension being positioned within said second opening

defined within said first set of split support elements whereby said first extension is rotatable within said second opening.

3. The rotary valve of claim 2, further comprising a first bearing mounted in said first opening around said first extension and a second bearing mounted in said second opening around said second extension.

4. The rotary valve of claim 1, further comprising a first end connector mountable to said valve body, a second end connector mountable to said valve body opposite to said first section, said first end connector and said second end connector securing said first set of split support elements together within said valve body.

5. The rotary valve of claim 1, wherein said rotary member is ball shaped.

6. The rotary valve of claim 1, further comprising a stem thrust washer mounted on said enlarged end of said valve stem which engages an inner surface of said valve body.

7. The rotary valve of claim 1, wherein said first extension is cylindrical.

8. A method for making a rotary valve, comprising:

inserting a valve stem through an opening in a valve body and utilizing an enlarged portion of said valve stem which does not pass through said opening to retain said valve stem within said valve body;

inserting a rotary element into said valve body, whereby an upper extension of said rotary element engages said valve stem;

supporting a first extension on said rotary valve for rotational movement by inserting a first set of split support elements from opposite ends of said valve body.

9. The method of claim 8, comprising supporting a second extension on said rotary valve for rotational movement by inserting a second set of split support elements from opposite ends of said valve body.

10. The method of claim 9, comprising utilizing a first end connector and a second end connector for securing said first set of split support elements and said second set of split support elements within said valve body.

11. The method of claim 10, comprising positioning a first bearing around said first extension, and positioning a second bearing around said second extension.

12. The method of claim 8, comprising positioning a thrust washer on said enlarged end of said valve stem to engage an inner surface of said valve body.

13. The method of claim 8, comprising providing that said first set of split support elements define a first opening which receives said first extension.

14. A rotary valve, comprising:

a valve body, which defines a valve stem opening;

a valve stem comprising an enlarged portion, said enlarged portion comprising a diameter greater than said valve stem opening to thereby secure said valve stem within said valve body by limiting radially outward movement of said valve stem with respect to said valve body;

a rotary member comprising a first portion at one side thereof;

a first set of split support elements comprising at least two separable sections which are mountable within said valve body from opposite sides of said valve body, said first set of split support elements constraining said first portion of said rotary member for rotational movement, said rotary member being interconnectable with said valve stem within said valve body, whereby said rotary member rotates in response to rotation of said valve stem.

15. The rotary valve of claim 14, wherein said rotary member comprises a second portion at a second side of said rotary member opposite to said first side, and a second set of split support elements comprising at least two separable sections which are mountable within said valve body from opposite sides of said valve body, when mounted within said valve body said second set of split support elements constraining said first portion of said rotary member for rotational movement.

16. The rotary valve of claim 15, wherein said first portion of said rotary member comprises a first cylindrical extension and said second portion of said rotary member comprises a second cylindrical extension.

17. A rotary valve, comprising:

a valve body, which defines a valve stem opening, said valve body defining a flow path through said rotary valve;

a valve stem comprising an enlarged portion, said enlarged portion comprising a diameter greater than a diameter of said valve stem opening to thereby secure said valve stem within said valve body by limiting radially outward movement of said valve stem with respect to said valve body;

a rotary member comprising first and second bosses on opposite sides of said rotary member, said rotary member being connectable with said valve stem

within said valve body, whereby said rotary member rotates in response to rotation of said valve stem,

first and second trunnions, said first and second trunnions rotationally supporting said first and second bosses for rotation of said rotary member while preventing axial movement along an axis of said flow path through said rotary valve.

18. The rotary valve of claim 17, wherein said first and second trunnions comprise split support elements which each comprise at least two separable sections which are mountable within said valve body from opposite sides of said valve body.

19. A method for making a rotary valve, comprising:

inserting a valve stem through an opening in a valve body, whereby said opening is sized to retain a relatively enlarged portion of said valve stem within said valve body;

inserting a rotary element into said valve body, whereby an upper boss engages said valve stem;

utilizing trunnions to mount said rotary element and constrain movement of said rotary element for rotational movement of said rotary valve while preventing axial movement along an axis of a flow path through said rotary valve.

20. The method of claim 19, wherein said step of utilizing trunnions further comprises supporting first and second bosses on said rotary valve by inserting split trunnion components of said trunnions from opposite ends of said valve body.

CLAIMS

WHAT IS CLAIMED IS

1. A rotary valve, comprising:

a valve body, which defines a valve stem opening and a fluid flow path through said valve body;

a valve stem comprising an enlarged portion, said enlarged portion comprising a diameter greater than said valve stem opening to thereby secure said valve stem within said valve body by limiting radially outward movement of said valve stem with respect to said valve body;

a first set of split support elements comprising at least two separable sections which are separately mountable within said valve body from opposite sides of said fluid flow path through said valve body with respect to said valve stem, and when mounted within said valve body said first set of split support elements define a first circular opening therethrough;

a rotary member with a first extension, said first extension being positioned within said first circular opening defined within said first set of split support elements whereby said first extension is rotatable within said first circular opening, said first extension being interconnectable with said valve stem within said valve body, whereby said rotary member rotates in response to rotation of said valve stem for controlling fluid flow through said fluid flow path through said valve body.

2. The rotary valve of claim 1, further comprising a second set of split support elements comprising at least two separable sections which are separately mountable within said valve body from opposite sides of said fluid flow path through said valve body, when mounted within said valve body said second set of split support elements defining a second circular opening therethrough, a second extension on said rotary member positioned on an opposite side of said rotary member from said first extension, said second extension being positioned within said second circular opening defined within said second set of split support elements whereby said second extension is rotatable within said second circular opening.

3. The rotary valve of claim 2, further comprising a first bearing mounted in said first circular opening around said first extension and a second bearing mounted in said second circular opening around said second extension.

4. The rotary valve of claim 1, further comprising a first end connector which encircles said fluid flow path mountable to said valve body, a second end connector which encircles said fluid flow path mountable to said valve body opposite to said first end connector, said first end connector and said second end connector securing said first set of split support elements together within said valve body.

5. The rotary valve of claim 1, wherein said rotary member is ball shaped.

6. The rotary valve of claim l, further comprising a stem thrust washer mounted on said enlarged portion of said valve stem which engages an inner surface of said valve body.

7. The rotary valve of claim 1, wherein said first extension is cylindrical.

8. A method for making a rotary valve, comprising:

inserting a valve stem through an opening in a valve body and utilizing an enlarged portion of said valve stem which does not pass through said opening to retain said valve stem within said valve body;

inserting a rotary element into said valve body, whereby a first extension of said rotary element engages said valve stem;

supporting said first extension on said rotary valve for rotational movement by inserting first and second components of a first set of split support elements from opposite ends of a flow path through said valve body, whereby after insertion into said valve body said first set of split support elements define a first circular opening within said valve body for supporting said first extension.

9. The method of claim 8, comprising supporting a second extension on said rotary element for rotational movement by inserting a second set of split support elements from opposite ends of said flow path through said valve body, said second set of split support elements defining a second circular opening therethrough for supporting said second extension.

10. The method of claim 9, comprising utilizing a first end connector and a second end connector for securing said first set of split support elements and said second set of split support elements within said valve body.

11. The method of claim 10, comprising positioning a first bearing around said first extension, and positioning a second bearing around said second extension.

12. The method of claim 8, comprising positioning a thrust washer on said enlarged portion of said valve stem to engage an inner surface of said valve body.

13. A rotary valve, comprising:

a valve body, which defines a valve stem opening;

a valve stem comprising an enlarged portion, said enlarged portion comprising a diameter greater than said valve stem opening to thereby secure said valve stem within said valve body by limiting radially outward movement of said valve stem with respect to said valve body;

a rotary member comprising a first extension at a first side thereof;

a first set of split support elements comprising at least two separable sections defining a first circular opening when interconnected which are separately mountable within said valve body from opposite sides of said valve body, said first set of split support elements constraining said first extension of said rotary member for rotational movement, said rotary member being interconnectable with said valve stem within said valve body, whereby said rotary member rotates in response to rotation of said valve stem.

14. The rotary valve of claim 13, wherein said rotary member comprises a second extension at a second side of said rotary member opposite to said first side, and a second set of split support elements comprising at least two separable sections defining a second circular opening which are separately mountable within said valve body from opposite sides of said valve body, when mounted within said valve body said second set of split support elements constraining said second extension of said rotary member for rotational movement.

15. The rotary valve of claim 14, wherein said first portion of said rotary member comprises a first cylindrical extension and said second portion of said rotary member comprises a second cylindrical extension.

16. A rotary valve, comprising:

a valve body, which defines a valve stem opening, said valve body defining a flow path through said rotary valve;

a valve stem comprising an enlarged portion, said enlarged portion comprising a diameter greater than a diameter of said valve stem opening to thereby secure said valve stem within said valve body by limiting radially outward movement of said valve stem with respect to said valve body;

a rotary member comprising first and second bosses on opposite sides of said rotary member, said rotary member being connectable with said valve stem within said valve body,

whereby said rotary member rotates in response to rotation of said valve stem so as to be operable for controlling fluid flow through said flow path;

first and second trunnions, said first and second trunnions defining a first circular opening and a second circular opening respectively, said first and second trunnions rotationally supporting said first and second bosses for rotation of said rotary member while preventing axial movement along an axis of said flow path through said rotary valve wherein

said first and second trunnions each comprise at least two separable sections which are separately mountable within said valve body from opposite sides of said valve body.

17. A method for making a rotary valve, comprising:

inserting a valve stem through an opening in a valve body, whereby said opening is sized smaller than an enlarged portion of said valve stem to retain said enlarged portion of said valve stem within said valve body;

inserting a rotary element into said valve body, whereby an upper boss engages said valve stem;

utilizing trunnions to mount said rotary element, wherein said trunnions define a circular opening for constraining movement of said rotary element to rotational movement of said rotary element within said valve body valve while preventing axial movement of said rotary element along an axis of a flow path through said rotary valve; and

wherein said step of utilizing trunnions further comprises utilizing separated sets of upper and lower split trunnions wherein each of said separated sets of upper and lower split trunnions comprise separable components, and further supporting said upper boss

and a lower boss on said rotary element by inserting said separable portions of said separated sets of upper and lower split trunnions into said valve body.

18. The method of claim 17, wherein said step of utilizing trunnions further comprises supporting first and second bosses on said rotary valve by inserting split trunnion components of said trunnions inserting said separable portions of said separated sets of upper and lower split trunnions into said valve body from opposite sides of said flow path through said valve body.