Claims

[Claim 1]

A valve comprising:

a valve body;

a valve plate; and

an actuation mechanism, wherein

the valve body includes two plates which are parallel to each other and symmetrical and on which medium access holes are correspondingly opened,

sealing rings a are symmetrically provided on inner surfaces of the two plates of the valve body, and the medium access holes on the two plates of the valve body are completely located within circumferentially closed holes of the sealing rings a,

the valve plate is tightly sandwiched between the sealing rings a when the valve is closed,

a fastening structure is installed on the two plates of the valve body and clamps the two plates of the valve body and/or the sealing rings a around radial peripheries of the sealing rings a, and

at least a part of the fastening structure can adjust its clamping degree in a direction perpendicular to a surface of the valve body~~.~~,

~~[Claim 2]~~

~~The valve according to claim 1, wherein~~

~~the valve is a gate valve;~~

the valve plate has two strip-shaped structures extending from both sides of an end t1 in a direction opposite to an opening direction of the valve plate, a thickness of the strip-shaped structures is a thickness of the valve plate, and outer edges of the strip-shaped structures are on extension lines of outer edges of the valve plate;

in a fully open state of the valve, a position of the end t1 of the valve plate corresponds to positions of inner edges of the sealing rings a here, a length of the strip-shaped structures is such that ends of the strip-shaped structures in the direction opposite to the opening direction of the valve plate do not fall within the valve body, and meanwhile, a width of the strip-shaped structures makes the strip-shaped structures completely press the sealing rings a at corresponding positions;

the sealing rings a respectively arranged on the two plates of the valve body are connected as a whole at an end T1 of the valve body where the strip-shaped structures enter and exit the valve body, and tiled to an edge of the end T1 of the valve body, or a sealing material a is laid in a cavity of the valve body between the edge of the end T1 of the valve body and the sealing rings a; and the sealing rings a or the sealing material a corresponding to the position of

the end T1 of the valve body is provided with an inlet and outlet B, B' of the strip-shaped structures.

[Claim ~~3~~2]

The valve according to claim ~~2~~1, wherein

the fastening structure includes a screw connection structure and/or a valve body external connection structure;

the screw connection structure includes a through-type screw nut structure, or also includes a top screw a;

the through-type screw nut structure is perpendicular to surfaces of the two plates of the valve body and penetrates the two plates to be evenly installed on the outer peripheries of the sealing rings a except for a position where the valve plate enters and exits a port of the valve body; the top screw a is evenly and symmetrically arranged on a channel steel a, the channel steels a are buckled in pairs on the outer surfaces of the two plates of the valve body corresponding to the port where the valve plate enters and exits the valve body, and the top screw a presses a corresponding plate of the valve body inwardly from an outer side of a bottom plate of the channel steel a; both ends of the channel steel a protrude out of the valve body, and through-type screw nuts are installed at both ends of each pair of the channel steels a;

the valve body external connection structure includes lugs and a through-type connector a;

the lugs are fixedly connected to pipe outer walls of two pipe nipples on both sides of the valve body and arranged symmetrically with respect to the two plates of the valve body, and the two pipe nipples are respectively fixedly connected in the medium access holes of the two plates of the valve body and have a caliber corresponding to a caliber of an on-site pipe; two or more of the lugs on each of the pipe nipples are evenly arranged around pipe walls of the pipe nipples, bottom plates of the lugs exceed side edges of the valve body, and the through-type connector a connects and clamps the two lugs arranged symmetrically on both sides of the valve body in a direction parallel to an axis of the pipe nipples;

the through-type connector a is a screw nut structure or a section steel or a steel pipe; the screw nut structure includes a screw that penetrates the two symmetrical bottom plates of the lugs and nuts that are respectively tightened inward from outer sides of the bottom plates of the lugs, or also includes nuts located inside the bottom plates of the lugs; and the section steel or the steel pipe penetrates the two symmetrical bottom plates of the lugs to form a fixed connection.

[Claim ~~4~~3]

The valve according to claim ~~2~~1, further comprising:

a pipe nipple; and

a positioning structure, wherein

two pipe nipples are respectively fixedly connected in the medium access holes of the two plates of the valve body and inserted into the plates of the valve body; the pipe nipples have a caliber corresponding to the caliber of the on-site pipeline;

radial inner edges of the sealing rings a are attached to the outer walls of the pipe nipples;

the positioning structure is located on the outer sides of the sealing rings a in a radial direction of the sealing rings a and fixed on the inner surfaces of the plates of the valve body and has no contact with the valve plate; the positioning structure has a positioning surface P1, and the positioning surface P1 abuts against the radial outer edges of the sealing rings a; or the positioning structure also has a fixing surface P2 which is connected to the positioning surface P1 at a right angle or an obtuse angle and lies on the inner surfaces of the plates of the valve body corresponding to the sealing rings a and is connected to the plates of the valve body;

the fastening structure includes a screw connection structure and/or a valve body external connection structure;

the screw connection structure includes top screws b, or also includes a through-type screw nut structure;

the top screws b are evenly arranged corresponding to

the sealing rings a, are screwed into the valve body vertically from the outer surfaces of the plates of the valve body, and push a backing plate to tighten the sealing rings a and the valve plate, and the backing plate is arranged between the inner surfaces of the plates of the valve body and the sealing rings a corresponding to the sealing rings a;

the through-type screw nut structure is evenly and symmetrically installed outside the radial outer edges of the sealing rings a, connecting the plates of the valve body and the fixing surface P2 of the positioning structure;

the valve body external connection structure includes the lugs and the through-type connector a;

the lugs are fixedly connected to the pipe outer walls of the two pipe nipples symmetrically, and two or more of the lugs on each of the pipe nipples are evenly arranged around the pipe walls of the pipe nipples, the bottom plates of the lugs exceed side edges of the valve body, and the through-type connector a connects and clamps the two lugs arranged symmetrically on both sides of the valve body in a direction parallel to the axis of the pipe nipple;

the through-type connector a is a screw nut structure or a section steel or a steel pipe; the screw nut structure includes a screw that penetrates the two symmetrical bottom plates of the lugs and nuts that are respectively tightened

inward from the outer sides of the bottom plates of the lugs, or also includes nuts located on the inner sides of the bottom plates of the lugs; and the section steel or the steel pipe penetrates the two symmetrical bottom plates of the lugs to form a fixed connection.

[Claim ~~5~~4]

The valve according to claim ~~3~~2, wherein

a rib a is arranged downstream of the valve plate in the pipe nipple, and the rib a is perpendicular to a surface of the valve plate with at least one end fixed to an inner wall of the pipe nipple.

[Claim ~~6~~5]

The valve according to claim ~~5~~4, wherein

the rib a has a non-fixed end which is not in contact with the inner wall of the pipe nipple and there is a distance Δs between the non-fixed end and the inner wall of the pipe nipple, and the Δs is not less than an expansion difference between the rib a and the pipe nipple; and

a limiting structure a is provided on the inner wall of the pipe nipple adjacent to the non-fixed end corresponding to a position of the non-fixed end of the rib a, and the limiting structure a restricts a displacement of the non-fixed end of the rib a from one or both sides of the non-fixed end.

[Claim ~~7~~6]

The valve according to claim ~~21~~1, wherein

a limiting structure b is provided adjacent to the sealing rings a on the inner surfaces of the two plates of the valve body corresponding to the sealing rings a to limit or prevent a displacement of the sealing rings a relative to the plates of the valve body; the limiting structure b has no contact with the valve plate.

[Claim ~~8~~7]

The valve according to claim ~~21~~1, wherein

the sealings ring a are in a square or rectangular shape, and are made of a packing, a polytetrafluoroethylene plate, or a composite plate that connects the polytetrafluoroethylene plate and a rubber plate.

[Claim ~~9~~8]

The valve according to any one of claims ~~21~~1 to ~~8~~7, wherein

the sealing material a or the sealing rings a located at the end T1 of the valve body protrude out of the end T1 of the valve body and a limiting structure c is provided below the sealing material a or the sealing rings a, and the limiting structure c is respectively fixed on the inner walls of the two plates of the valve body;

a channel steel b and a fastening structure on the channel steel b are provided corresponding to the position of the end T1 of the valve body, and the channel steel b is

buckled on the end T1 of the valve body and two symmetrical elevations of the channel steel b are respectively located on the outer sides of the two plates of the valve body and parallel to the two plates of the valve body; and

an inlet and outlet C, C' of the strip-shaped structures are opened on a bottom plate of the channel steel b.

[Claim ~~10~~9]

The valve according to claim ~~9~~8, wherein

pulling lugs are provided on the outer surfaces of the two plates of the valve body, and the pulling lugs are parallel and close to the bottom plate of the channel steel b, covered in a groove of the channel steel b and not in contact with the channel steel b;

the fastening structure on the channel steel b includes fasteners and top screws which are installed symmetrically;

the bottom plate of the channel steel b and the corresponding pulling lugs under the bottom plate of the channel steel b are vertically connected and symmetrically clamped using the fasteners, which are installed evenly in pairs, symmetrically along a center line of the inlet and outlet C,C'; and meanwhile, the top screws penetrate the elevations of the channel steel b in the vertical directions of the two symmetrical elevations of the channel steel b and

press against the outer surfaces of the two plates of the valve body respectively in a uniform and symmetrical manner.

[Claim ~~11~~10]

The valve according to claim ~~10~~9, wherein

a size of the inlet and outlet C, C' is larger than a corresponding end size of the strip-shaped structures;

stuffing boxes and/or stuffing cases are respectively arranged at positions corresponding to the inlet and outlet C, C';

circumferences of the stuffing boxes are fixed on side walls of the inlet and outlet C, C';

the stuffing cases are vertically arranged on the surface of the outer side of the bottom plate of the channel steel b, including a casing pipe, a sealing material c, a flange gland and a corresponding fastener;

the casing pipe is sleeved on the strip-shaped structures and a flange a is provided at least at one end far away from the inlet and outlet C, C'; the sealing material c is filled in the casing pipe or wound on the strip-shaped structures and is closely attached to the sealing material a or the sealing rings a protruding out of the end T1 of the valve body; and the flange gland is screwed to the flange a at one end of the casing pipe away from the channel steel b through a corresponding fastener.

[Claim ~~12~~11]

The valve according to claim ~~11~~10, wherein

the casing pipe is provided with a flange b at one end near the channel steel b, a sealing ring c is provided between the flange b and the bottom plate of the channel steel b, the flange b is screwed to the channel steel b, corresponding connecting holes on the flange b are long holes S, S', and long sides of the long holes S, S' are parallel to the bottom plate of the channel steel b and perpendicular to the axis of the valve body.

[Claim ~~13~~12]

The valve according to claim ~~12~~11, wherein

a movable flange and a friction reduction structure are further provided between the sealing ring c and the channel steel b; the friction reduction structure is disposed on the outer surface of the bottom plate of the channel steel b and is sleeved around an outer periphery of the sealing material c; the movable flange is located between the friction reduction structure and the sealing ring; and the flange b, the movable flange and the channel steel b are screwed sequentially.

[Claim ~~14~~13]

The valve according to ~~any one of~~ claim~~s~~ ~~9 to 13~~8, further comprising:

a sealing detection structure, wherein

the sealing detection structure includes a square pipe

or a square steel, a detection hole and a hole cover of the detection hole;

the square pipe or the square steel is sandwiched between the inner side of the bottom plate of the channel steel b and the sealing material a or the sealing ring a protruding out of the end T1 of the valve body, and is closely attached to the two symmetrical elevations of the channel steel b in a lateral direction;

strip-shaped access holes D, D' are opened on the square pipe or the square steel corresponding to the strip-shaped structures and the sealing material c surrounded or wrapped around the strip-shaped structures;

side detection holes F, F' are opened corresponding to the strip-shaped access holes D,D’ at both ends of the square pipe or the square steel respectively; and

at least one detection hole G of the end T1 of the valve body is opened on the square pipe or the square steel corresponding to a position between the strip-shaped access holes D, D’.