Sept. 27, 1955 A. R. COTTON 2,718,898

VALVES

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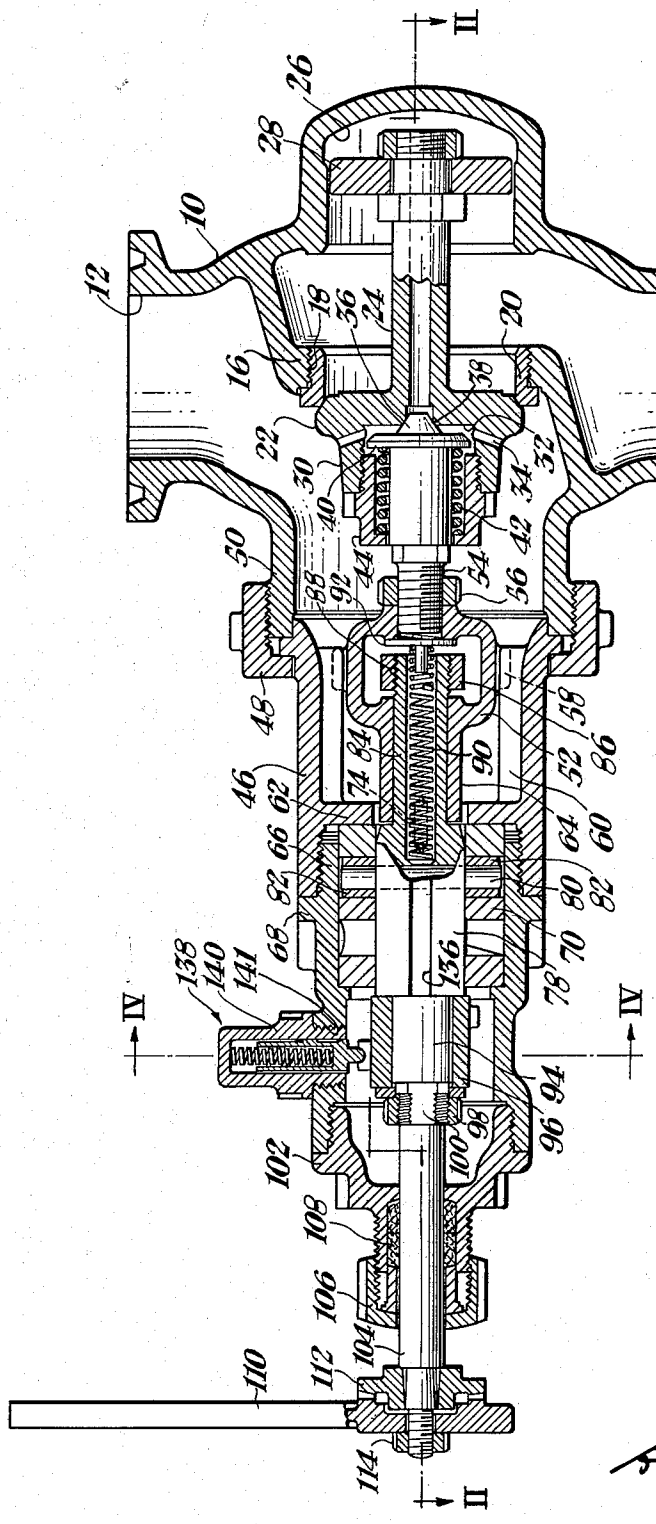


Fig. 1.

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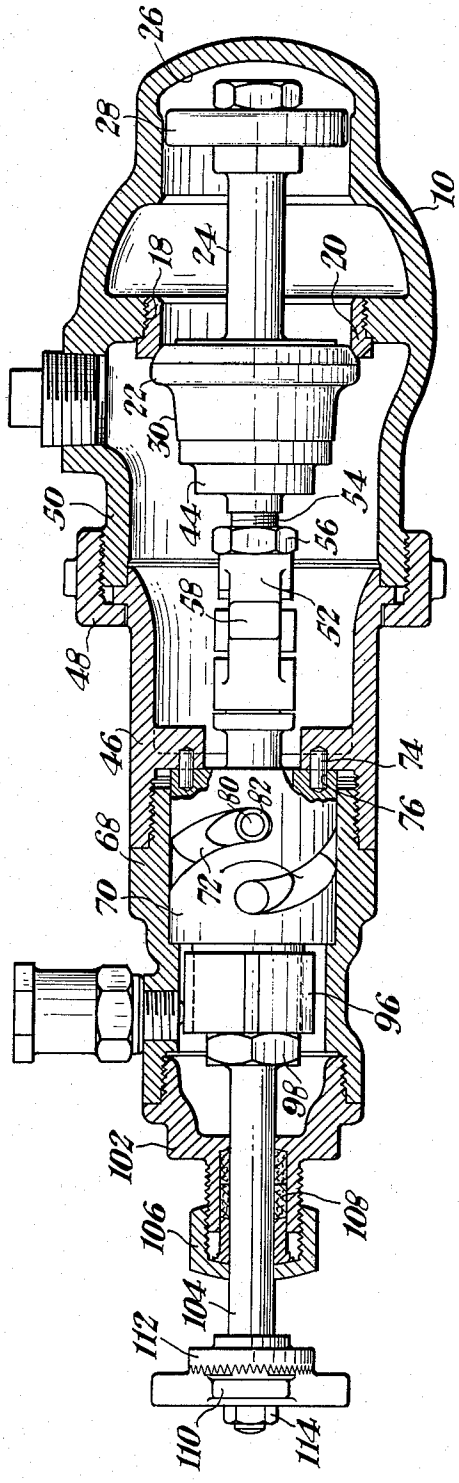


Fig. 2.

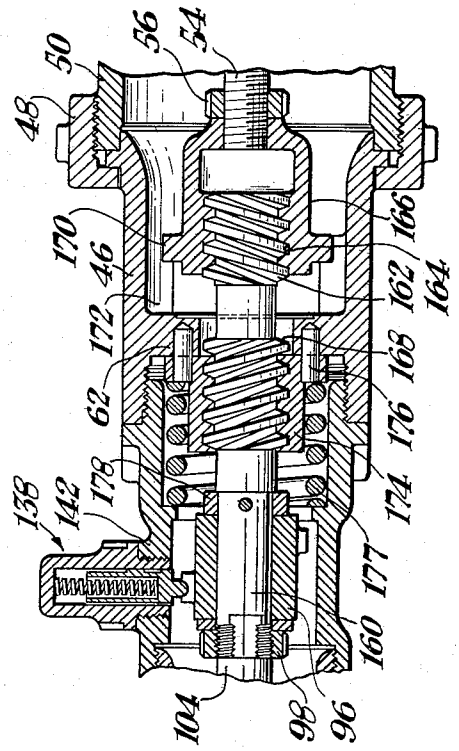


Fig. 8.

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VALVES

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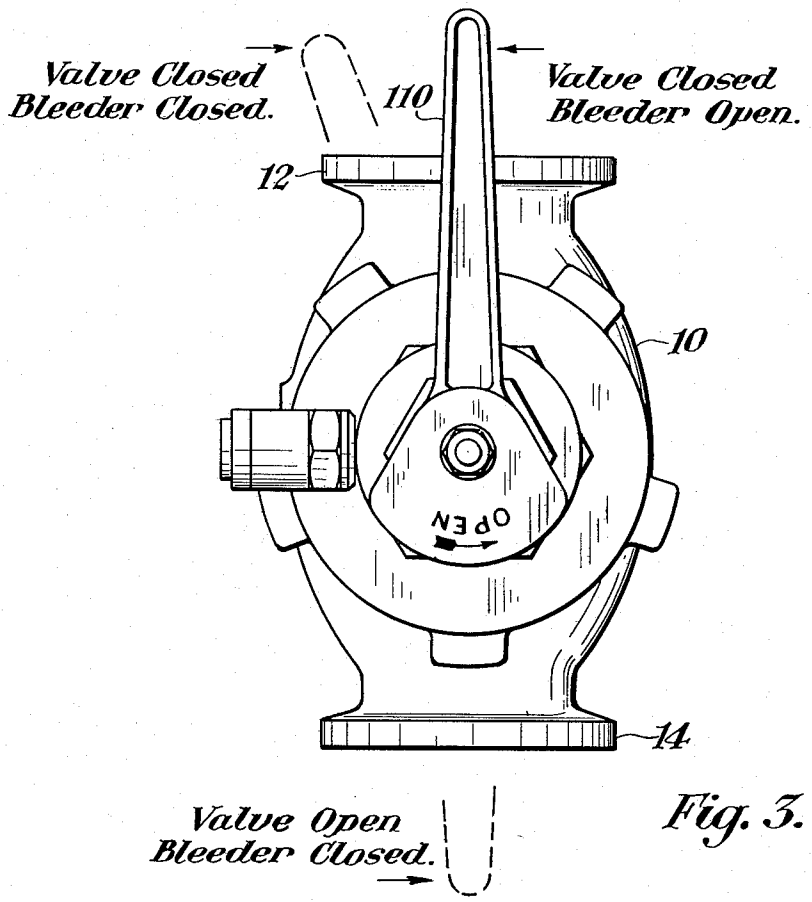


Fig. 3.

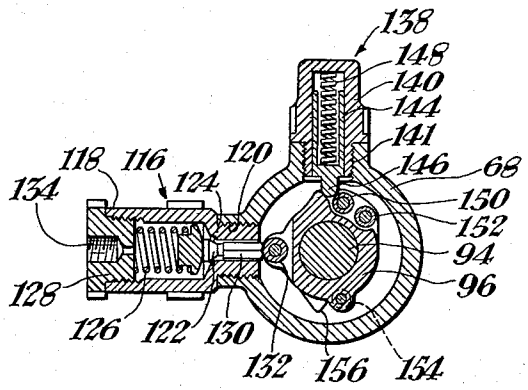


Fig. 4.

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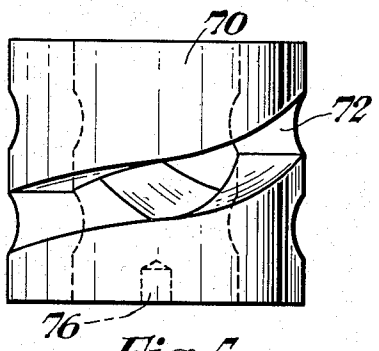


Fig. 5.

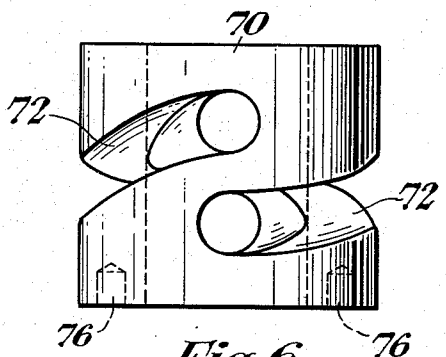


Fig. 6.

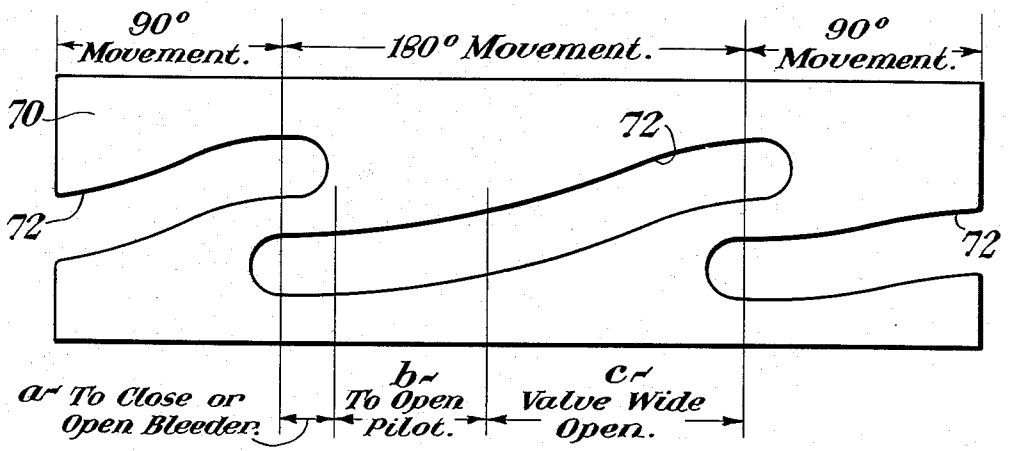


Fig. 7.

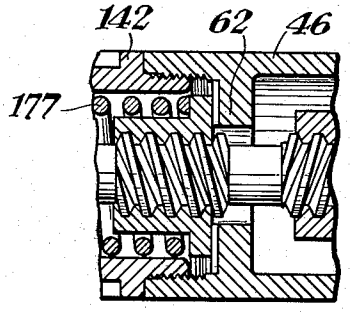


Fig. 9.

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VALVES

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Application January 2, 1951, Serial No. 204,019

10 Claims. (Cl. 137—339)

This invention relates to valves and more particularly to multiple valves of the balanced globe type having an auxiliary valve means operable independently of the main valve by manipulation of the main valve operating means.

In a preferred embodiment of the present invention, the valve body is provided with an inlet and an outlet passageway intersected by a valve seat. A main valve member reciprocates between open and closed positions relative to the seat upon rotation of an operating stem. The main valve member carries a pressure responsive device on the outlet side of the seat. Fluid is admitted to the device through a pilot valve means in the closed position of the main valve member for establishing a balanced pressure condition prior to opening the main valve member. Thereafter, rotation of the operating stem serves to open the main valve member while the pilot valve means returns under bias to its closed position.

A bleed connection is provided in the valve structure for communication with the inlet passageway in the closed position of the main valve member. An auxiliary valve member controls the flow through the bleed connection and is operated from the valve stem. In one of the disclosed embodiments the main valve member is reciprocated by means of a cam arrangement cooperable with the operating stem. The cam has a non-rising portion which permits opening of the auxiliary valve member while the main valve member remains closed.

In another embodiment a pair of oppositely threaded connections cooperate with the stem to effect reciprocation of the main valve member. One connection is biased against slidable movement until the main valve member is closed whereupon a reverse rotation of the stem serves to overcome the bias and the auxiliary valve member is opened without affecting the closed main valve member.

Thus among the objects of the invention is the creation of a balanced pressure condition prior to opening of a main valve member.

Another object of the invention is the prevention of freezing in steam pipe lines by supplying a jet of steam through a bleed connection while the main valve remains closed.

Another object of the invention is to eliminate the erosion or cutting of the valve seats which usually occurs when the main valve is slightly opened to prevent freezing.

Another object of the invention is to render a balanced valve self-adjusting in its shut-off by yieldable connections.

Another object of the invention is to index the open and closed positions of both main and auxiliary valves by adjustable means which also non-positively locks the operating means in the appropriate positions.

Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a longitudinal sectional view of a valve constructed in accordance with this invention,

Fig. 2 is a longitudinal section taken on the line II—II of Fig. 1,

Fig. 3 is an end elevation corresponding to Fig. 1,

Fig. 4 is a cross section taken on the line IV—IV of Fig. 1,

Figs. 5 and 6 are front and side elevations respectively of a detail,

Fig. 7 is a geometrical development of the surface of the detail shown in Figs. 5 and 6,

Fig. 8 is a partial longitudinal section corresponding to Fig. 1, but showing another embodiment of the invention, and

Fig. 9 is a partial longitudinal section corresponding to Fig. 2 and showing the modified form of Fig. 8.

Referring more particularly to the drawings, the valve body 10 is provided with oppositely disposed inlet and outlet passageways 12 and 14 respectively, which are adapted for connection in a pipe line in any conventional manner. A partition 16 having an opening 18 therein extends between the inlet passageway 12 and the outlet passageway 14 and affords communication therebetween. A valve seat 20 is secured to the wall of the opening 18 in any suitable manner, as by a threaded connection, and is of annular form.

A main valve member 22 is reciprocable between open and closed positions relative to the valve seat 18 for controlling the flow of fluid through the opening 18. A hollow projection 24 on the main valve member 22 extends through the annular valve seat 20 into a chamber 26 formed on the valve body 10. The hollow projection 24 carries a piston member 28 in slidable engagement with the wall of the chamber 26 and having a diameter sufficient to permit insertion through the annular valve seat member 20 during the assembly operation. The main valve member 22 is provided with an annular wall 30 on the side opposite the hollow projection 24 and defining a pilot valve chamber 32. The wall of the annular projection 30 is provided with a plurality of apertures 34 which provide communication between the inlet passageway 12 and the pilot valve chamber 32. A pilot valve member 36 is movable between open and closed positions relative to a pilot valve seat 38 formed on the bottom wall of the chamber 32 to control the admission of fluid to the chamber 26.

The pilot valve member 36 is provided with an enlargement 40 providing a seat for one end of a coil spring 42, the other end of which seats on an abutment 44 carried by the annular projection 30. When the pilot valve member 36 is engaged with its seat 38 then the enlargement 40 is spaced from the abutment 44 due to bias of the coil spring 42. When the bias of the coil spring 42 is overcome then the abutment 44 serves to limit movement of the pilot valve member 36 toward open position relative to the pilot valve seat 38.

A bonnet member 46 is connected to the body portion 10 by a union nut 48 engaging suitable threads formed on an annular head portion 50 of the body portion 10. The head portion 50 is axially aligned with the valve seat 20 and, by means of such connection, the bonnet member 46 can be rotated to any desired position relative to the inlet passageway 12 and the outlet passageway 14 as will be apparent. A hollow guide member 52 is secured at one end to a threaded connection 54 formed on the pilot valve member 36 and a lock nut 56 is provided to prevent relative movement therebetween. The guide member 52 carries oppositely disposed lugs 58 which straddle oppositely disposed guide bars 60 formed in the bonnet 46. The guide member 52 is thus slidably but non-rotatably mounted in the bonnet portion 46.

The bonnet portion 46 is provided with a hollow partition 62 through which an annular extension 64 of the guide member 52 is adapted to project. On the opposite side of the partition 62 the bonnet 46 is internally threaded for the reception of a threaded end 66 of a re-

tainer housing 68. The bonnet 46 and the housing 68 are thus secured in fluid-tight engagement.

The housing 68 supports a cylindrical cam element 70 as shown more clearly in Figs. 5, 6 and 7. The cam element 70 is of angular form having a pair of oppositely disposed cam slots 72 formed in the outer wall thereof and shaped substantially as shown in the geometrical development of Fig. 7. As there shown, the portion designated (*a*) is substantially non-rising, the portion (*b*) is moderately rising and the portion (*c*) is relatively steep rising. A rotary movement of approximately 180° is included within the portions designated (*a*), (*b*), and (*c*) collectively, as indicated in Fig. 7.

The cam element 70 is retained against relative rotation in the housing 68 by a pair of oppositely disposed pins 74 which extend from the partition 62 into suitable apertures 76 formed in the cam element 70. An operating stem 78 for the valve members 22, 36 is positioned in the annular cam element 70 and carries a transverse pin 80 having a pair of cam rollers 82 supported for rotation on the projecting ends thereof. The cam rollers 82 project into the cam slots 72 for converting rotation of the stem 78 into an axial movement.

Such axial movement of the stem 78 is transmitted to the guide member 52 by a hollow extension 84 of the stem 78 which is journaled in the annular extension 64 of the guide member 52. A thrust element in the form of a nut 86 threadedly engages the end of the extension 84 and is adapted to bear against the guide member 52 for limiting axial movement relative to the stem 78. The nut 86 is retained in position on the extension 84 by a pin connection 88 between these members. To provide a self-adjustment in an axial direction, the hollow extension 84 contains a coil spring 90 which exerts a thrust on the guide member 52 through a thrust washer 92 positioned between these parts.

The stem 78 is provided with a reduced portion 94 beyond the portion carrying the cam element 70. The reduced portion 94 supports an adjustable sleeve 96 which can be locked in any desired position of adjustment by a lock nut 98 carried on a threaded end 100 formed on the reduced portion 94. The housing 68 carries an end cap member 102 through which a reduced bearing portion 104 of the operating stem 78 extends. A suitable packing gland 106 and packing 108 are provided in the end cap 102 for sealing the bearing portion 104 against leakage. The bearing portion 104 projects beyond the packing gland 106 and carries an operating handle 110 cooperable with a notched plate 112 also carried on the bearing portion 104 for adjusting the handle 110 angularly relative to the operating stem 78. A lock nut 114 serves to retain the handle 110 in its position of adjustment.

Means are provided for bleeding fluid from the inlet passageway 12 to the exterior of the valve structure when the main valve member 22 is in closed position. This means takes the form of auxiliary valve means designated generally by the reference numeral 116 and shown more clearly in Fig. 4. The auxiliary valve means 116 comprise a housing 118 threadedly engaging the wall of a transverse aperture 120 formed in the cam retainer 68 opposite the sleeve 96 therein. The housing 118 makes a pressure tight joint with the retainer housing 68 and contains an auxiliary valve member 122 movable between open and closed positions relative to a valve seat 124 formed in the housing 118. The valve member 122 is biased toward the seat 124 by a coil spring 126 which is operative between the valve member 122 and a closure member 128 for the housing 118.

The auxiliary valve member 122 is provided with a stem 130 which projects into the retainer housing 68 and engages an operating roller 132 carried by the sleeve 96. Such engagement between the roller 132 and the stem 130 serves to operate the valve member 122 to open position relative to the valve seat 124. The valve stem 130 is non-circular or otherwise formed to permit flow of bleed fluid from the cam retainer 68 past the valve seat 124 and into an orifice 134 formed in the closure member 128. Suitable pipe connections may be employed in conjunction with the orifice 134 to convey the bleed fluid to any desired location. Passage of such bleed fluid from the inlet passageway 12 into the housing 68 is provided by oppositely disposed longitudinal slots 136 formed in the operating stem 78 for this purpose.

As indicated in Fig. 3, suitably indexing means are employed for the various valve positions. The indexing means is designated generally by the reference numeral 138 and comprises a housing 140 having threaded connection with the wall of a transverse aperture 142 formed in the wall of the cam retainer 68. A plunger 144 is slidably mounted in the housing 140 and has an index pawl 146 formed on the projecting end thereof. A coil spring 148 is operative between the housing 140 and the plunger 144 for biasing the pawl 146 into operative engagement with a plurality, in this instance three, roller elements 150, 152 and 154 carried on the sleeve 96. The collar 96 is suitably cut away adjacent the roller elements 150, 152 to provide, in conjunction with the rollers, for a non-positive locking of the pawl 146. Similarly, a projection 156 is formed on the collar 96 adjacent the roller element 154 to provide a notch portion for the reception of the pawl 146 at that location.

OPERATION

The handle 110 is shown as positioned in the "Valve Closed, Bleeder Open" position. This indicates that the main valve member 22 and the pilot valve member 36 are engaged with their respective seats 18 and 38 while the auxiliary valve member 122 is disengaged from its seat 124 as shown in Fig. 4. Consequently, bleed fluid will flow through the inlet passageway 12 into the valve bonnet 46 and through the slots 136 in the operating stem 78 past the auxiliary valve member 122 to the orifice 134. As previously indicated, this bleed fluid may be steam to be utilized to prevent freezing in steam pipe lines while the main valve member 22 remains closed.

To open the main valve member 22 the handle 110 is rotated approximately 180° in a counterclockwise direction as viewed in Fig. 3 to the broken line position indicated by the legend "Valve Open, Bleeder Closed." In such operation, the first 20° of rotation causes no axial movement of the operating stem 78 since only the movement designated (*a*) in Fig. 7 is involved. As stated, this portion of the cam element slot 72 is substantially non-rising. However, the index pawl 146 is now positioned between the roller elements 150, 152 indicating the "Valve Closed, Bleeder Closed" position by non-positive stop means as described. At the same time, the roller element 132 is moved out of engagement with the auxiliary valve stem 130 wherefor the auxiliary valve member 122 returns to closed position under bias of the coil spring 126. Thus, in the indicated position the main valve member 22 remains closed while the flow of bleeder fluid is shut off.

The next 60° of movement causes the index pawl 146 to become disengaged from the roller elements 150, 152 and also causes the stem 78 to rise axially about one eighth of an inch due to the moderate rise of the cam slots 72 as indicated at (*b*) in Fig. 7. This operation serves to engage the lock nut 86 with the guide member 52 and to cause the latter to lift the pilot valve member 36 to open position against the bias of the pilot valve spring 42. Consequently, fluid now passes from the inlet passageway 12 through the apertures 34 into the hollow extension 24 and the chamber 26. Such fluid under pressure acting on the piston 28 equalizes the fluid pressure on either side of the main valve member 22 and creates a balanced valve condition as will be apparent.

The next 100° of movement causes the operating stem

78 to rise to the full open position due to the relatively steep rise of the cam slots 72 as indicated at (c) in Fig. 7. The main valve member 22 is thus moved to full open position, such movement being facilitated by the balanced valve condition described. Since the valve condition is now balanced, the pilot valve spring 42 is enabled to exert its bias and the pilot valve member 36 is returned thereby to closed position relative to the pilot valve seat 38. The index pawl 146 now engages between the roller 154 and the projection 156 thus non-positively locking the valve in the "Valve Open, Bleeder Closed" position shown in Fig. 3.

If the handle 110 is moved in a clockwise direction from the "Valve Open, Bleeder Closed" position to the position "Valve Closed, Bleeder Closed" then the operating stem 78 will move axially toward the main valve seat 18. The first 100° of this movement causes the operating stem 78 to move axially quite rapidly due to the relatively steep rise in the cam slot 72. The next 60° of movement causes the operating stem 78 to move axially less rapidly due to the lesser rise of the cam slots 72. During this action, the cam slots 72 exert pressure on the cam rollers 82 and through the spring 74 on the pilot valve member 36. Since the pilot valve member 36 is in engagement with its seat 38 such pressure is transmitted to the main valve member 22 which moves to closed position and shuts off flow of fluid between the inlet passageway 12 and the outlet passageway 14. The index pawl 146 is at this time located between the roller elements 150, 152 causing the valve to be non-positively locked in the "Valve Closed, Bleeder Closed" position.

If the handle is moved further in a clockwise direction from the "Valve Closed, Bleeder Closed" position to the position "Valve Closed, Bleeder Open" then the operating stem 78 cannot move axially due to the non-rise portion of the cam slots 72 designated at (a) in Fig. 7. However, the roller 132 will make contact with the auxiliary valve stem 130 causing the auxiliary valve member 122 to be opened to admit fluid to the orifice 134 as previously described. The index pawl 146 moves out of engagement with the rollers 150, 152 and engages between the roller 150 and the cutaway portion of the sleeve 96, thus non-positively locking the valve in the "Valve Closed, Bleeder Open" position shown in the drawings.

Modified form Figs. 8 and 9

In the modified form, the cam operation is dispensed with but otherwise the parts remain unchanged. The operating stem designated 160 in this embodiment, shown in Figs. 8 and 9, is provided with an enlarged end 162 suitably threaded for engagement with an internally threaded portion 164 formed on a stem guide member 166. A second threaded portion 168 is formed on the stem 160 and spaced from the threaded portion 162. The portions 162, 168 are oppositely threaded with the portion 162 being left hand and the portion 168 being right hand.

The guide member 166 in this embodiment is also provided with oppositely disposed lugs 170 which straddle oppositely disposed guide bars 172 projecting from the bonnet 46. The threaded extension 54 on the pilot valve member 56 is received within a suitably threaded recess in the guide member 166 and the lock nut 56 is employed in this embodiment to secure the parts together.

The second threaded portion 168 is received within a nut 174 which is slidably but non-rotatably mounted on a pair of pins 176 projecting from the partition 62. The nut 174 is housed within the housing 142 and a coil spring 177 is operative between these parts for biasing the nut 174 against relative axial movement.

As in the previous embodiment, the sleeve 96 is employed and is secured in position on the operating stem 160 by means of the lock nut 98. However, a collar 178 is interposed between the portion of the stem 160 carrying the sleeve 96 and that portion carrying the threaded section 168 to provide for proper location of the sleeve 96 relative to the housing 142.

OPERATION OF MODIFIED FORM

The operation of the modified valve differs from that previously described only that in the closing operation the movement of the valve member 22 toward its seat is uniform with the operating stem 160 traveling toward the valve seat 18 at half the velocity of the valve member 22. When the valve member 22 is engaged with the valve seat 18, a further rotation of the operating stem 160 to open the auxiliary valve 122 serves to overcome the bias of the coil spring 177. Thus, the function of the coil spring 177 is to prevent the nut 174 from rising until the valve member 22 is fully seated. Otherwise, the operation remains identical to that described in connection with the previous embodiment.

It will be apparent that many changes may be made in the details of construction and arrangement of parts within the scope of the appended claims.

I claim:

1. A valve comprising a body member having inlet and outlet passageways, a partition intermediate said passageways having an opening affording communication therebetween, a valve seat in said opening, a main valve member reciprocable between a closed and a plurality of open postions relative to said seat for controlling the flow of fluid through the opening, said body having a chamber on the outlet side of said seat, a hollow piston carried by said main valve member for slidable engagement with the wall of said chamber, said main valve member having a hollow projection on the inlet side thereof forming a pilot valve chamber communicating with said hollow piston and defining a pilot valve seat at one end of said pilot valve chamber, said projection having an apertured wall for admission of fluid to said pilot valve chamber from said inlet passage, a pilot valve member movable between open and closed positions relative to said pilot valve seat, abutment means carried by said projection for operative engagement with said pilot valve member for limiting movement of said pilot valve member toward said open position, means operable between said abutment means and said pilot valve member for biasing the latter away from said abutment means and toward said closed position, and operating means for moving said pilot valve member against said bias to said open position for admitting fluid to said body chamber to establish a balanced pressure condition, said biasing means being thereafter effective for moving said main valve member to one of said open positions and causing said pilot valve member to be restored to said closed position under said bias, said operating means being thereafter effective for moving the assembly of said main valve member and said pilot valve member relative to the first said valve seat for positioning said main valve member in another of said open positions.

2. A valve comprising a body member having inlet and outlet passageways, a partition intermediate said passageways having an opening affording communication therebetween, a valve seat in said opening, a main valve member reciprocable between open and closed positions relative to said seat for controlling the flow of fluid through said opening, a pressure responsive device on the outlet side of said seat, pilot valve means carried by said main valve member and operable in the closed position thereof for admitting fluid to said device for establishing a balanced pressure condition, a bleed connection in said body member and communicating with said inlet passageway in all positions of said main valve member, said body member having an auxiliary valve seat for said bleed connection, auxiliary valve means cooperable with the said auxiliary valve seat for controlling the flow of fluid through said bleed connection, rotatable operating means

for said main valve member, means cooperable with said operating means and connected to said pilot valve member for first establishing said condition and thereafter moving said main valve member to said open position, and means carried by said operating means and operatively engageable with said auxiliary valve means in one position of rotation of said operating means for opening said auxiliary valve means in the said closed position of said main valve member.

3. A valve as claimed in claim 2 wherein said operating means comprises a stem portion rotatable relative to said body for operating said auxiliary valve means, and means for converting rotation of said stem portion into axial movement thereof for operating said main valve member and said pilot valve means, said means connected to said pilot valve means comprising a guide member engageable with said stem portion and non-rotatably mounted in said body and including an adjustable connection with said pilot valve means.

4. A valve comprising a body member having inlet and outlet passageways, a partition intermediate said passageways having an opening affording communication therebetween, a valve seat in said opening, a main valve member reciprocable between open and closed positions relative to said seat for controlling the flow of fluid through said opening, said body having a chamber on the outlet side of said seat, a hollow piston carried by said main valve member for slidable engagement with the wall of said chamber, said main valve member being apertured for admission of fluid through said piston to said chamber for establishing a balanced pressure condition when said main valve member is in said closed position, a pilot valve member carried by said main valve member and biased to a closed position for preventing said fluid admission to said chamber, a bleed connection in said body member for communicating with said inlet passageway in all positions of said main valve member, said body member having an auxiliary valve seat for said bleed connection, auxiliary valve means cooperable with said auxiliary valve seat for controlling the flow of fluid through said bleed connection, an operating stem mounted in said body for rotation relative thereto and having a passage for said bleed fluid formed therein, means carried by said stem and operatively engageable with said auxiliary valve means in one position of rotation of said stem for opening said auxiliary valve means in the said closed position of said main valve member, a guide member bearing on said stem and secured to said pilot valve member, means slidably but non-rotatably mounting said guide member in said body, and means operable between said body and stem for converting rotation of the latter into axial movement thereof for operating said main and said pilot valve members.

5. A valve comprising a body member having inlet and outlet passageways, a partition intermediate said passageways having an opening affording communication therebetween, a valve seat in said opening, a main valve member reciprocable between open and closed positions relative to said seat for controlling the flow of fluid through said opening, a pressure responsive device on the outlet side of said seat, pilot valve means carried by said main valve member and operable in the closed position thereof for admitting fluid to said device for establishing a balanced pressure condition, a bleed connection in said body member and communicating with said inlet passageway, said body member having an auxiliary valve seat for said bleed connection, auxiliary valve means cooperable with said auxiliary valve seat for controlling the flow of fluid through the bleed connection, an operating stem rotatable relative to said body, guide means bearing on said stem and secured to said pilot valve means, means for mounting said guide means slidably but non-rotatably in said body member, a cam element mounted between said body member and said stem, cam roller means carried by said stem for operative engagement with said cam element for imparting axial movement to said stem, non-positive stop means operable between said body and stem for indexing open and closed positions of said main valve member, and means carried by said stop means and operatively engageable with said auxiliary valve means in one position of rotation of said stem for opening the auxiliary valve means in said closed position of said main valve member.

6. A valve as claimed in claim 5 wherein said cam element is provided with rising and non-rising portions, said auxiliary valve opening means being effective during engagement of said cam roller means with said non-rising portion.

7. A valve comprising a body member having inlet and outlet passageways, a partition intermediate said passageways having an opening affording communication therebetween, a valve seat in said opening, a main valve member reciprocable between open and closed positions relative to said seat for controlling the flow of fluid through said opening, a pressure responsive device on the outlet side of said seat, pilot valve means carried by said main valve member and operable in the closed position thereof for admitting fluid to said device for establishing a balanced pressure condition, a bleed connection in said body member and communicating with said inlet passageway, said body member having an auxiliary valve seat for said bleed connection auxiliary valve means cooperable with the said auxiliary valve seat for controlling the flow of fluid through said bleed connection, a rotatable operating stem extending through said body, means carried by said stem and operatively engageable with said auxiliary valve means in one position of rotation of said stem for opening said auxiliary valve means, a first guide member threadedly connected to said stem and secured to said pilot valve means, said first guide member being slidably but non-rotatably mounted in said body, a second guide member threadedly connected to said stem and being slidably but non-rotatably mounted in said body, and means for biasing said second guide member against said slidable movement, said connections being oppositely threaded for causing said auxiliary valve member to be opened by overcoming said biasing means upon reverse rotation of said stem while said main valve member is closed.

8. A valve comprising a body member having inlet and outlet passageways, a partition intermediate said passageways having an opening affording communication therebetween, a valve seat in said opening, a main valve member reciprocable between open and closed positions relative to said seat for controlling the flow of fluid through said opening, a bleed connection in said body member and communicating with said inlet passageway, said body member having an auxiliary valve seat for said bleed connection, auxiliary valve means cooperable with said auxiliary valve seat for controlling the flow of fluid from said inlet passageway through said bleed connection, an operating stem rotatable relative to said body, means operatively connecting said stem to said main valve member, a cam element mounted between said body member and said stem, cam roller means carried by said stem for operative engagement with said cam element for imparting axial movement to said stem, non-positive stop means operable between said body and said stem for indexing open and closed positions of said main valve member, and means carried by said stop means and operatively engageable with said auxiliary valve means in one position of rotation of said stem for opening said auxiliary valve means in said closed position of said main valve member.

9. A valve as claimed in claim 5 wherein said cam element is provided with rising and non-rising portions, said auxiliary valve opening means being effective during engagement of said cam roller means with said non-rising portion.

10. A valve comprising a body member having inlet and outlet passageways, a partition intermediate said passageways having an opening affording communication therebetween, a valve seat in said opening, a main valve

member reciprocable between open and closed positions relative to said seat for controlling the flow of fluid through said opening, a bleed connection in said body member and communicating with said inlet passageway, said body member having an auxiliary valve seat for said bleed connection, auxiliary valve means cooperable with said auxiliary valve seat for controlling the flow of fluid through said bleed connection, an operating stem rotatable relative to said body, means operatively connecting said main valve member to said operating stem, means cooperable with said body member and said operating stem for imparting axial movement to said stem upon rotation thereof, said last named means being constructed and arranged to permit limited rotational movement of said stem without accompanying axial movement thereof in the closed position of said main valve member, non-positive stop means operable between said body and said stem for indexing open and closed positions of said main valve

member, and means carried by said stop means and operatively engageable with said auxiliary valve means in one position of rotation of said stem for opening said auixiliary valve means in said closed position of said main valve member.

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