

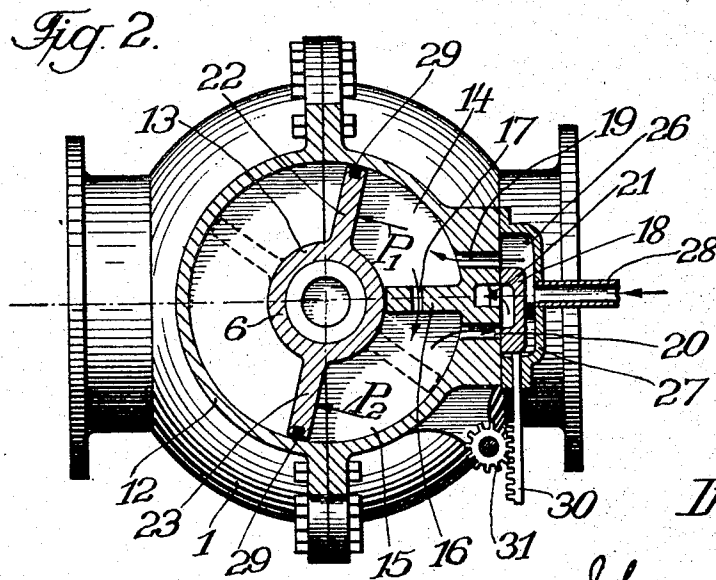
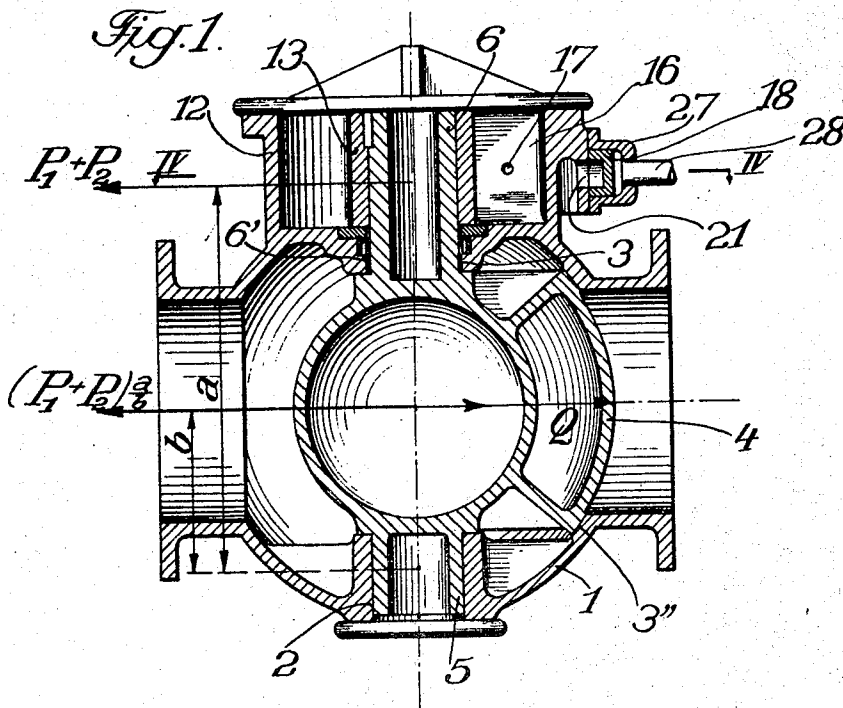
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ROTARY VALVE FOR PIPE LINES

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ROTARY VALVE FOR PIPE LINES.

Original application filed January 6, 1927, Serial No. 159,465, and in Germany July 29, 1925. Divided and this application filed April 25, 1927. Serial No. 186,475.

The present invention relates to improvements in rotary valves for pipe lines and is a division application Ser. No. 159,465, filed January 6, 1927.

5 With the rotary valve according to the present invention one of the fulcrum pins is mounted with clearance in its bearing to permit a relief of pressure when opening the valve as well as when closing it inasmuch as
10 the device for actuating the gate acts upon the latter through the intermediary of an abutment member fixed to the fulcrum pins in such a manner that previous to the turning of the gate and during that turning the
15 gate is lifted off its seat against the opposing water pressure.

A constructional example of the subject matter of the present invention is illustrated on the accompanying drawings, in which:

20 Fig. 1 is a vertical section of the valve provided with means for operating the valve by pressure liquid and

Fig. 2 is a plan view of Fig. 1 with parts shown in section along line IV—IV in
25 Fig. 1.

The bipartite valve casing 1 is provided with the two bearing parts 2 and 3, in which the fulcrum pins 5 and 6 of the rotary gate body 4 are rotatably mounted, the gate resting on a seat 3' of the casing for obturation
30 purposes. The fulcrum pin 6 fits into its bearing 3 with a small clearance 6'. With the valve casing a casing 12 for a rotary piston is cast in one or it is fixed thereto by
35 screws. In the casing 12 a rotary piston 13 is rotatably mounted having two blades 22 and 23 provided with resilient tightening strips 29 for packing the blades against the casing 12. A stationary partition wall 16
40 subdivides the space inside the casing 12 and to one side of the blades into an opening chamber 14 and a closing chamber 15. A small hole 17 is provided in the partition wall 16. 19 and 20 denote channels connecting the chambers with the chamber 26
45 formed by a chest 27 fixed to the casing 12. Intermediate of the channels 19 and 20 a discharge opening 21 is arranged leading into the open. By means of the pipe 28 pressure
50 liquid is admitted to the chamber 26 and the flow of the liquid through the channels 19, 20 or 21 respectively is controlled by an ordinary slide valve 18 operated by a rack

30 and pinion 31. Obviously instead of providing the hole 17 in the wall 16 a communication between the chambers 14 and 15 may
55 be provided by the controlling valve itself.

Assume the rotary valve to be closed and the rotary piston 13 to take up the position shown in Fig. 2. If now the valve has to
60 be opened the slide valve 18 is adjusted into the position illustrated in Fig. 2. The pressure liquid entering through the channel 19 fills first of all the chamber 14 and flows then through the hole 17 into the chamber
65 15. As the pressure liquid in the latter chamber may escape through channel 20 and discharge opening 21 a larger hydraulic pressure is generated in the chamber 14 than in the chamber 15. These two unequal pressures on the two blades of the rotary piston
70 13 are indicated by the pressures P_1 and P_2 (Fig. 2). When the valve is almost in its closed position the sum of the forces multiplied by the ratio of the lever arms a/b
75 yields a force acting approximately in the center of the valve and being opposed to the water pressure Q . The difference of the forces $P_1 - P_2$ corresponds to the turning moment available for turning the gate body.
80 By suitably choosing and throttling by means of the slide valve 18 the cross-sections of the channels 19 and 20 and of the hole 17 the gate may be partly or wholly relieved of the pressure. On closing the valve the
85 opposite movement occurs. When the valve is completely open the blades 22 and 23 are in the position shown in dotted lines in Fig. 2. The slide valve 18 is so displaced that pressure liquid enters chamber 15 through
90 channel 20 and flows through hole 17 into chamber 14, the latter being connected to the open by the channel 19 and opening 21, whereby a force opposed to the water pressure is generated in the manner described
95 above. This force acts as long as liquid pressure is present in the chambers 14 and 15. If the pressure liquid supply is then cut off the gate body is pressed against its seat by the water pressure in the pipe line where-
100 by the desired tightening effect is obtained.

I claim:

1. A rotary valve for pipe lines, comprising in combination, a valve casing provided with a seat and bearings, a gate body having
105 fulcrum pins rotatably mounted in said

bearings, one of said pins fitting with play in its bearing, and said gate body being adapted to cooperate with said seat for obturation purposes, a rotary piston provided with blades and fixed to one of said fulcrum pins and a casing in which said piston is adapted to turn, a partition wall provided in said piston casing and subdividing the space between said blades into working chambers, said partition wall being provided with a hole, and means adapted to control the flow of pressure liquid to and from said chambers for effecting by the liquid pressure a relief of the gate body and a turning of the latter.

2. A rotary valve for pipe lines, comprising in combination, a valve casing provided with a seat and bearings, a gate body having fulcrum pins rotatably mounted in said bearings, one of said pins fitting with play in its bearing, and said gate body being

adapted to cooperate with said seat for obturation purposes, a rotary piston provided with spaced blades and fixed to one of said fulcrum pins and a casing in which said piston is adapted to turn, a partition wall provided in said piston casing and subdividing the space between said blades into working chambers communicating with each other by a hole in said partition wall, a valve chest and channels establishing communication between said chest and said working chambers, means adapted to supply pressure liquid to said chest, and a valve adapted to control the flow of pressure liquid to and from said chambers for effecting by the liquid pressure a relief of the gate body and a turning of the latter.

In testimony whereof, I have signed my name to this specification.

JOHANN SCHNYDER.