

G. H. VIGER.
 REDUCING VALVE.
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1,108,950.

Patented Sept. 1, 1914.

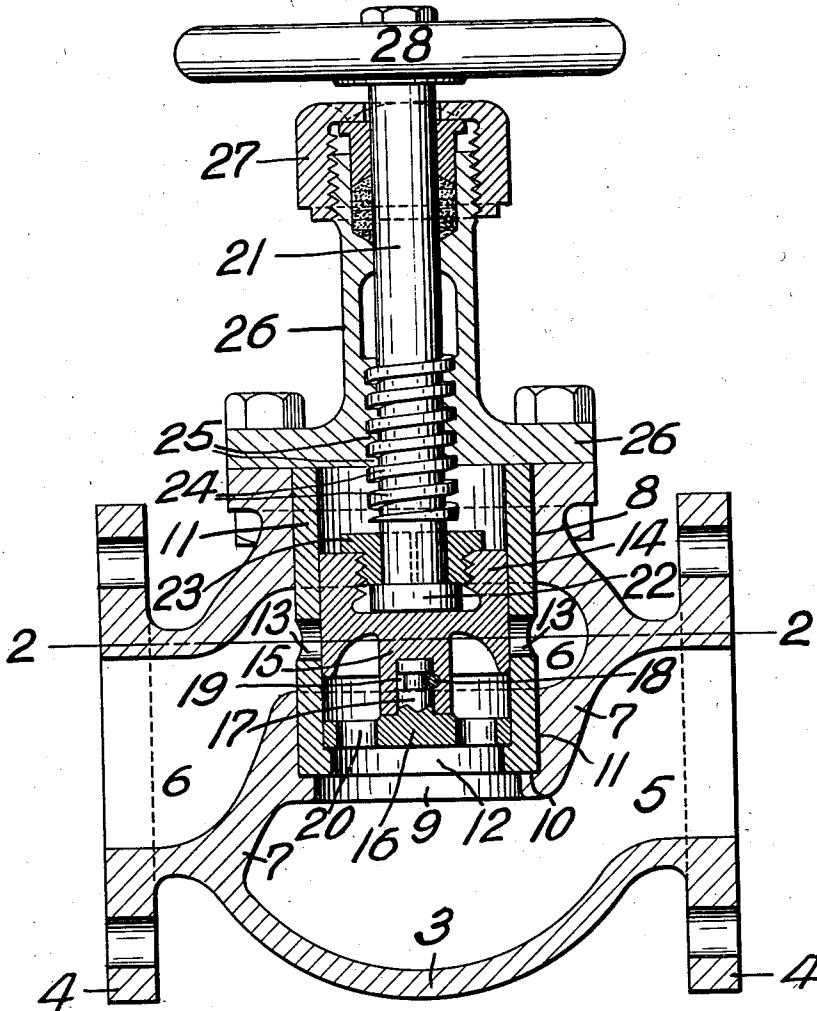


FIG. 1.

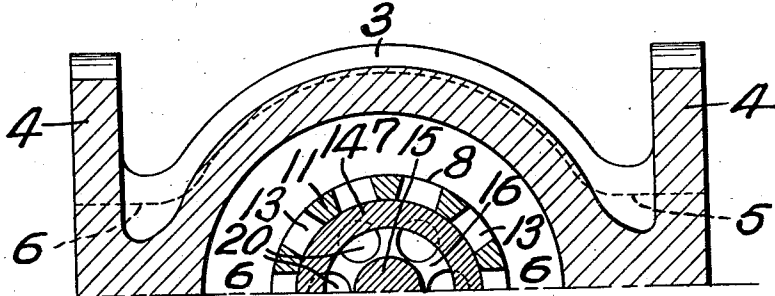


FIG. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE H. VIGER, OF MONTREAL, QUEBEC, CANADA.

REDUCING-VALVE.

1,108,950.

Specification of Letters Patent.

Patented Sept. 1, 1914.

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To all whom it may concern:

Be it known that I, GEORGE H. VIGER, of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented new and useful Improvements in Reducing-Valves, of which the following is a full, clear, and exact description.

This invention relates to improvements in reducing valves, and the object is to provide a valve of strong and simple construction which may be very accurately adjusted to reduce a fluctuating fluid pressure to a lower and uniform fluid pressure.

A further object is to provide a reducing valve particularly designed to be used in connection with heating and drying systems, in which it is essential to maintain the steam at a low and unvarying pressure for long periods of time, regardless of variations in the pressure of the steam supplies.

In the drawings which illustrate the invention:—Figure 1 is a vertical longitudinal section of the reducing valve. Fig. 2 is a horizontal section on the line 2—2, Fig. 1.

Referring more particularly to the drawings, 3 designates a casing provided at opposite ends with flanges 4 or other suitable means for attaching the valve in a pipe line. The inlet and outlet passages 5 and 6 respectively of the body are separated by a diaphragm 7, as is usual in the structure of globe valves. The top of the valve is provided with a large circular opening 8 which communicates with the outlet passage 6. The bore of this opening is carried down through the outlet passage 6 and nearly through the diaphragm 7. A slightly smaller aperture 9 is formed through the diaphragm so that a shoulder 10 is formed upon which is seated a bushing 11, which may be driven or screwed into the opening 8. The lower end of this bushing is provided with an internal flange 12. As will be seen in the drawings, the outlet passage 6 and bushing 11 are so arranged that the passage extends entirely around the bushing. Communication between the interior of the bushing and the outlet passage is established through a plurality of apertures or ports 13 formed through the wall of the bushing. A piston 14 is slidably mounted in the bushing and is of sufficient depth to cover all the ports 13. The lower side of the piston is

concave and is provided at the center with a downwardly extending hollow projection 15. Below the piston is a disk 16 having a circumferentially grooved post 17, which enters the projection 15 and is held against reciprocatory movement relative thereto, but is permitted rotary movement by means of a pin 18 fixed in the projection 15 and engaging the groove 19. This disk 16 rests on the flange 12 and limits the downward movement of the piston 14. A plurality of apertures 20 are formed through the disk and communicate through the aperture 9 with the inlet passage 5. The valve stem 21 is provided at its lower end with a collar 22. A split nut 23 is screwed into the upper surface of the piston and bears against the upper surface of the collar 22, so that the valve stem is attached to the piston and is at the same time allowed to revolve relatively thereto. The central portion of the valve stem is provided with screw threads 24 which engage with corresponding threads 25 formed in a neck 26, which is rigidly secured to the upper part of the body 3. The valve stem passes out of the neck through a stuffing box 27, and may be provided with any suitable rotating means such as a hand wheel or crank, indicated at 28.

The operation of the valve will be well understood from the drawings, and need only be briefly described. The steam enters through the passage 5 and passes into the bushing 11 through the apertures 20 of the disk 16. When the valve stem is rotated sufficiently to uncover a suitable area of the ports 13, the steam rushes through these ports into the outlet passage 6. It will be readily understood that it will be possible to provide a greater outlet area in the apertures 13 than in the apertures 20, so that steam at high pressure passes through the apertures 20 and expands within the bushing 11 under the piston, and then passes through the ports 13 at reduced pressure and velocity and expands into the large outlet passage 6. The concave lower face of the piston 14 has a tendency to throw the steam back upon itself, so that the velocity of the flow is checked. By raising the piston only a small amount, a very small port opening can be obtained, so that steam entering the valve at very high pressures will leave at very low pressures.

Having thus described my invention, what I claim is:—

5 1. A reducing valve comprising a body having inlet and outlet passages, a cylinder in said body communicating through its end with the inlet passage, ports in the curved wall of said cylinder communicating with the outlet passage, a piston valve in said cylinder an apertured disk carried by said piston valve and spaced therefrom, and means for reciprocating the valve to cover and uncover the ports.

10 2. A reducing valve comprising a body having inlet and outlet passages, a cylinder in said body communicating through its bottom with the inlet passage, ports in the curved wall of said cylinder communicating with the outlet passage, a piston in said cylinder having a concave lower face, an

apertured disk carried by the piston limiting fluid flow through the bottom of the cylinder, and means for reciprocating the piston to cover and uncover the ports. 20

3. A reducing valve comprising a body having inlet and outlet passages, a cylinder in the body having apertures communicating with the outlet and with the inlet, a piston valve mounted to reciprocate in said cylinder having a downwardly extending projection and an apertured disk provided with a post revolubly mounted in said projection. 25 30

In witness whereof I have hereunto set my hand in the presence of two witnesses.

GEORGE H. VIGER.

Witnesses:

STUARD R. W. ALLEN,
G. M. MORELAND.