July 11, 1939. J. G. PARSONS 2,165,649

VALVE

Filed March 30, 1936 2 Sheets-Sheet 1

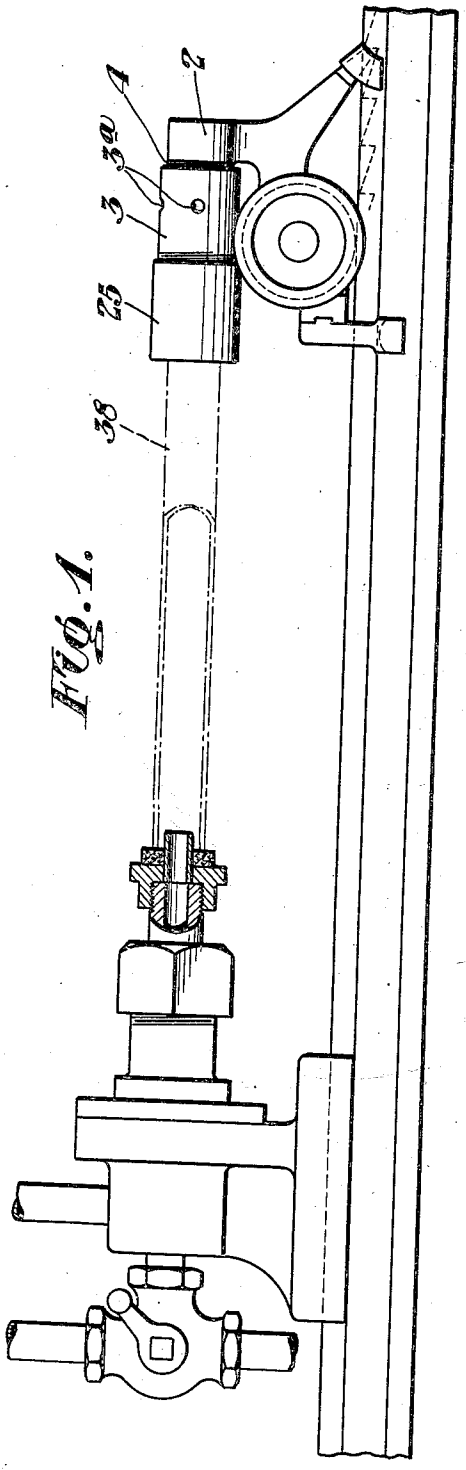


Fig. 1.

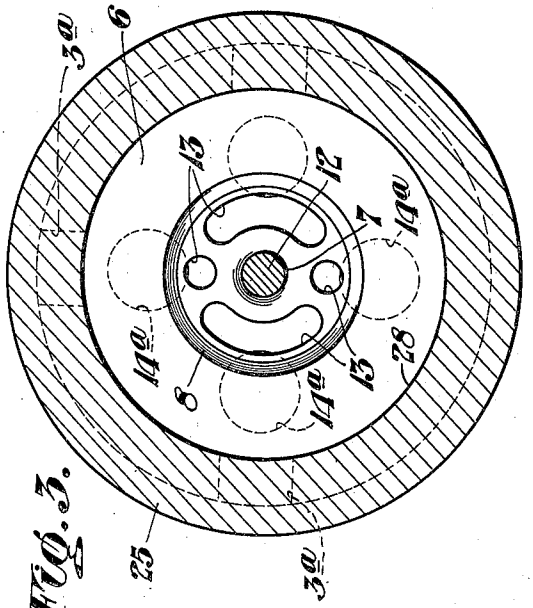


Fig. 3.

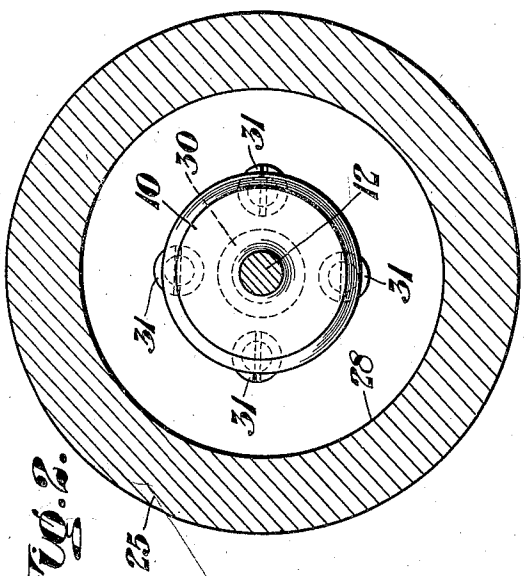


Fig. 2.

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VALVE

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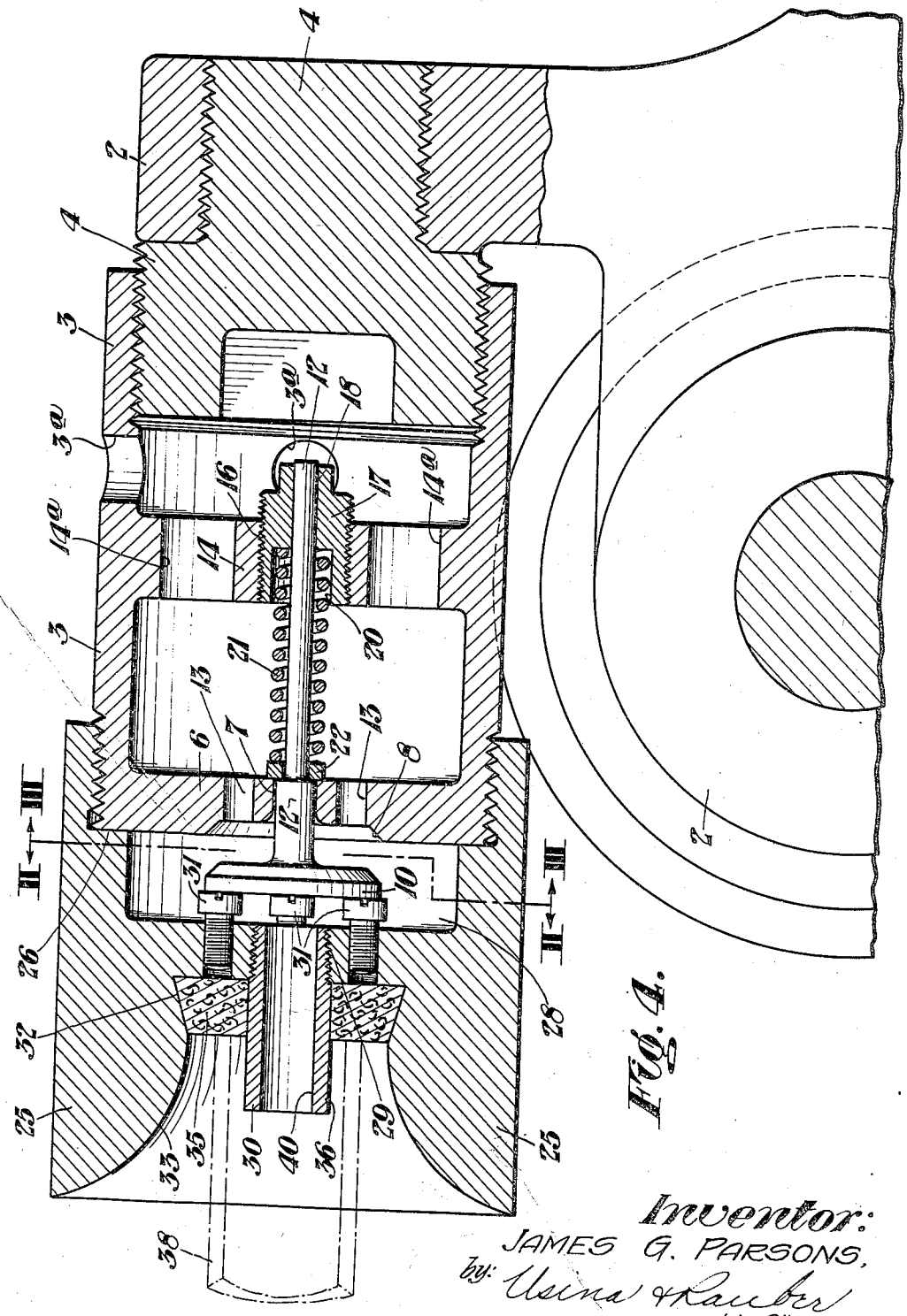


Fig. 4.

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Patented July 11, 1939 2,165,649

UNITED STATES PATENT OFFICE

2,165,649

VALVE

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Application March 30, 1936, Serial No. 71,773

1 Claim. (Cl. 251—145)

This invention relates to valves and more particularly to an automatic air relief valve.

In determining the quality of material in pipes, tubes, and cored or other hollow objects, it is customary to apply hydrostatic pressure internally. According to this method, the air within the test-piece must be completely evacuated before the air vent is closed if assurance is to be had that the test fluid is in contact with the walls of the cavity at all points. The prevailing practice is to cause the testing fluid (usually water under pressure), as it fills the cavity, to force the air out through a vent at a point in that part of the cavity uppermost and most remote from the point of admission of the test fluid. Toward the completion of the process of exhausting the air, mist and, finally, test fluid escapes at the air vent, indicating that the air in the cavity is exhausted. The loss of this testing fluid under high pressure should be avoided.

It is among the objects of the present invention to effect the complete evacuation of air from the cavity of the test-piece coincident with the filling thereof with testing fluid, whereby the loss or waste of the latter is eliminated.

The foregoing and further objects will be apparent after referring to the drawings, in which:

Figure 1 is an elevation of the device of the invention.

Figure 2 is a sectional view on the line II—II Figure 4.

Figure 3 is a sectional view on the line III—III of Figure 4.

Figure 4 is an enlarged sectional side elevation.

Referring more particularly to the drawings, the numeral 2 designates the tail-stock of the test machine. A cylindrical valve body 3 is internally threaded to receive one end of an externally threaded plug 4. The other end of this plug 4 is also externally threaded for engagement with the threaded bore of the tail-stock 2, whereby the valve body 3 is supported.

The end of the valve body 3 which is opposite the tail-stock 2 is provided with a wall 6 which is centrally apertured, as at 7. This wall 6 is provided with a valve seat 8 to accommodate a poppet valve 10 whose stem 12 extends through the aperture 7. The wall 6 of the valve body 3 is provided with a series of apertures 13 around the aperture 7 to enable the flow of fluids therethrough.

The valve body 3 is provided with an inner wall 14, in parallelism with the wall 6, which is centrally apertured and screw-threaded as at 16 to accommodate an externally screw-threaded thimble 17. This thimble 17 extends into a chamber between the wall 14 and the plug 4. The wall 14 is apertured into this chamber, as shown at 14a. Similarly, the wall of the valve body 3 is apertured into the chamber between the wall 14 and the plug 4, thereby forming an exterior vent, as shown at 3a.

The bore 18 of the thimble 17 receives the extended end of the poppet valve 10. The end of the thimble 17 which is adjacent the wall 6 is recessed, as at 20, to receive one end of a valve spring 21 which is carried on the valve stem 12. The other end of the valve spring 21 contacts a valve lock 22 which is also carried on the valve stem 12.

The end of the valve body 3 which is provided with the wall 6 is externally screw-threaded on its end to carry an internally screw-threaded connection 25. This connection 25 provides a seat for the extremity of the valve body 3 in the form of an annular flange 26. The connection 25 also provides a central recess 28, the back wall of which is centrally apertured, as at 29. This aperture 29 is screw-threaded to receive an externally screw-threaded thimble 30.

A plurality of cap-screws 31 are threaded into the back wall of the central recess 28 to provide stops for the poppet valve 10.

The thimble 30 in the aperture 29 extends through a frusto-conical recess 32 which opens into the bell-mouthed end 33 of the connection 25. A fiber gasket 35 is disposed in the frusto-conical recess 32 around the thimble 30, the latter extending therefrom and into the bell-mouthed end 33, as shown at 36.

In operation, a tubular test-piece 38 is disposed in the bell-mouthed end 33 of the connection 25, and around the extended end 36 of the thimble 30, with its end in contact with the adjacent side of the fiber gasket 35.

Fluid under pressure is introduced into the test-piece 38 and displaces the air therein, the latter leaving the test-piece through the bore 40 of the thimble 30. The force exerted by the air escaping from the thimble 30 against the face of the poppet valve 10 is a function of its density and is not great enough to compress the valve spring 21 and consequently cannot seat the poppet valve on its seat 8 in the wall 6 of the valve body 3. When the air has been displaced the oncoming fluid under pressure, again, because of its density, impinges on the face of the poppet valve with force sufficient to compress the valve spring 21 and to securely hold the poppet valve

10 on its seat 8. The test fluid is released from the test-piece 38 by way of the usual three-way valve (not shown) through which it was admitted thereto.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined by the following claim.

I claim:

A valve comprising a valve body having an internal chamber, the end walls of said chamber being provided with aligned apertures, a poppet valve carried by said valve body with its stem extending through said aligned apertures, the end wall of said chamber which is adjacent the head of said poppet valve having a seat for said poppet valve and a port within said seat, the other end wall of said chamber having an exhaust port an apertured plug adjustably disposed in the aperture of the wall of said chamber which is remote from the head of said poppet valve, the stem of said poppet valve being adapted to extend through the aligned apertures in the end walls of said chamber and through the aperture in said plug, said plug being constructed and arranged to receive one end of a valve spring, the head of said poppet valve being adapted to contact said poppet valve seat to thereby close said first named port, means carried by said valve body for venting fluids which have been passed through said exhaust port, a detachable coupling carried by the end of said valve body which is adjacent the head of said poppet valve, said detachable coupling having an inlet port in alignment with the head of said poppet valve, a resilient spring carried by said valve body with one of its ends received by said plug, said spring being constructed and arranged to bias said poppet valve toward said inlet port, and adjustable means carried by said detachable coupling for preventing said poppet valve from closing said inlet port.

JAMES G. PARSONS.