

M. W. QUICK.
COCKING VALVE.

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1,369,050.

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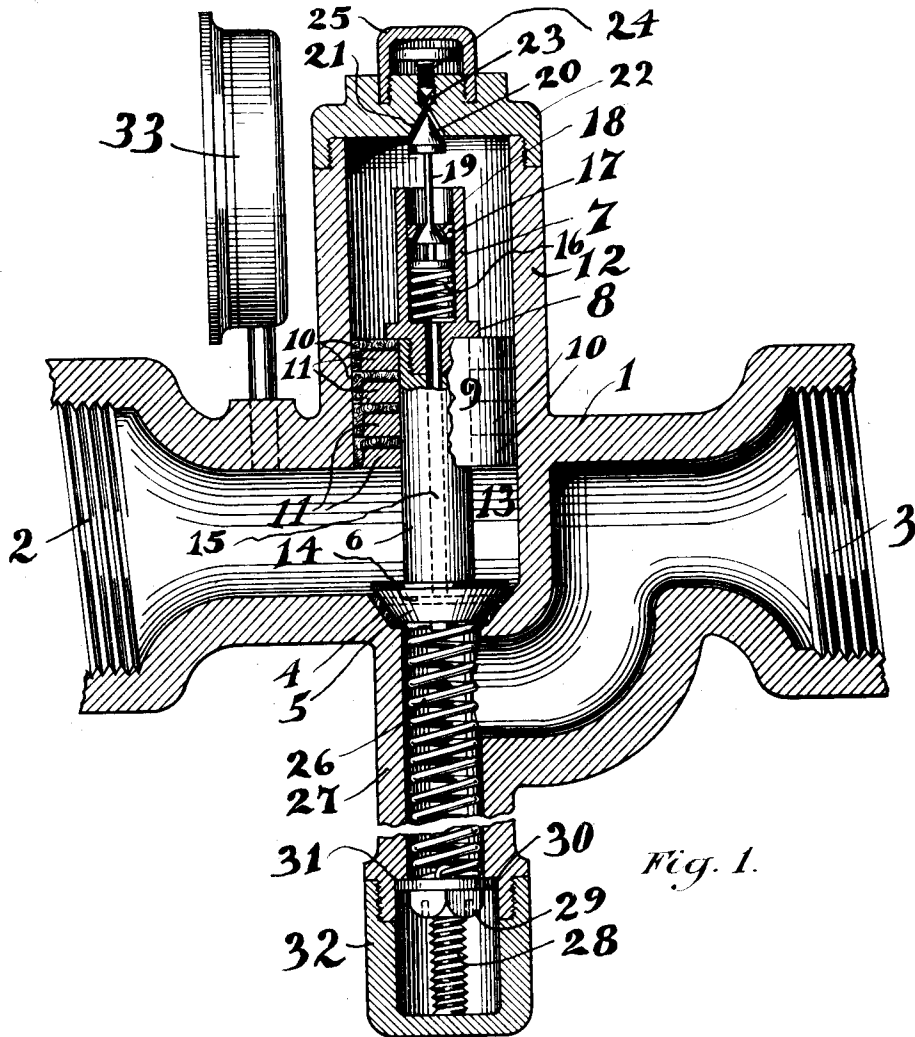


Fig. 1.

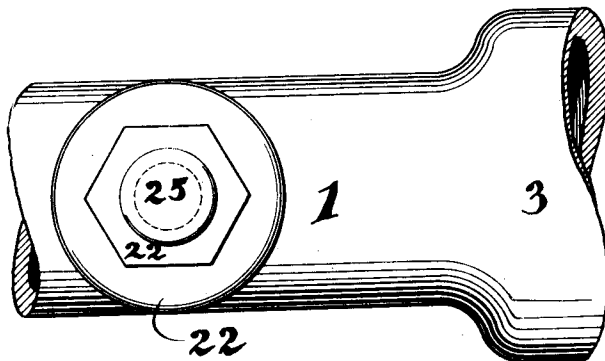


Fig. 2.

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COCKING-VALVE.

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To all whom it may concern:

Be it known that I, MILES W. QUICK, a citizen of the United States, residing at Titusville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Cocking-Valves; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form part of this specification.

Like figures of reference refer to like parts.

This invention relates to exhaust-choke-valves, particularly to that class thereof which is adapted to use in connection with oil-gas-producing wells.

In following the present method of operating oil producing areas, it is customary to give free vent to the rock saturations co-incident with the penetrations of their containing formations, and during the subsequent operation of wells drilled therein.

This continued free venting of the product soon results in its apparent exhaustion, but wells can, to a considerable degree, be revived by reestablishing a greater tension within the rock saturation through periodically resisting expansion, thereby rendering higher degrees of expansion force available for its subsequent release in the expulsion of product.

One object of my invention is therefore to provide means for periodically resisting and releasing oil well vapors within predetermined limits of pressure, to conserve the energy within the producing rock saturation.

Another object is to provide a valve mechanism which will be easily assembled and taken apart, one which can be adjusted in a simple and effective manner to suit conditions under which it is used.

With this and other objects in view my invention consists in certain construction which is illustrated in the drawings and is hereinafter described, the operation of the same is explained and what I claim is set forth.

In the drawings,

Figure 1 is a sectional elevation and Fig. 2 is a top plan, of one embodiment of my exhaust choke valve.

In the figures, 1 is the valve casing having a threaded inlet branch at 2, and a threaded outlet branch at 3. In the channel between 2 and 3 is a valve seat 4, into which fits the conical valve disk 5, the disk 5 is integral with a valve stem 6. The valve stem 6 has a hollow extension 7, threaded therewith. A shouldering flange 8 engages a piston 9 made up of cupped leather sections 10, 10, 10, 10 within each of which is an expansion ring 11, tending to press the leather in complete contact with the wall of the cylinder 12, which opens into the cavity 13 of the channel between the branches 2 and 3. Passing diametrically through the valve disk 5 and piercing the conical surface thereof is a hole 14, which communicates with a longitudinal hole 15, which opens into the space occupied by the spring 16 in the extension 7. Forced into the extension 7 is a valve seat 17, which is normally closed by the cone 18, being seated by the spring 16. Extending up from the cone 18, and loosely engaging a hole in the valve seat 17 is a stem 19 which terminates in a cone 20, which in turn is adapted to seat at 21 in the cylindrical cap 22, in threaded engagement with the cylinder 12. The hole in the seat 21 communicates with a transverse hole 23, the passage being adjustably restricted by the screw 24, over which is a threaded cap 25 to protect the same. The hole 23 communicates with the atmosphere.

The disk 5 is kept normally closed by the action of the tension spring 26, which passes down through a cylindrical portion 27 of the casing 1 and is connected with a threaded rod 28, which in turn is engaged by a nut 29 bearing against a washer 30, shouldered at 31. A cap 32 threaded with the portion 27 protects the rod 28 and the nut 29. Communicating with the cavity 13 is a pressure gage 33.

In operation, when the pressure in the cavity 13 reaches an amount sufficient to cause the piston 9 to move upward within the cylinder 12 against the action of the previously regulated spring 26, holding the disk 5 against the seat 4, the disk 5 upon leaving its seat 4 will permit gas under pressure to find its way to the exhaust outlet 3 and also through the hole 14 and the hole 15 into the cavity of the extension 7, where it will remain until the piston 9 has traveled upward far enough to cause the cone 20 to contact its seat 21 and close the outlet to the

space above the piston 9, at the same time forcing the cone 18 off its seat 17, allowing gas to flow into the cavity of the cylinder 12, above the piston 9, and building up
 5 pressure on the top of the piston 9, to offset pressure on the underside of the piston, so that the resultant pressure amounts to less than the pull of the spring 26, at which
 10 time the disk 5 will return to its seat 4, cutting off communication between the branches 2 and 3 of the casing 1. Should the pressure in the cavity 13 remain at the amount it was, when the valve disk 5 left its seat 4, the operation just described will
 15 be repeated, and will occur again and again, in succession until the pressure in the cavity 13, has become reduced sufficiently to permit the valve at 5 to remain closed. During the closure of the valve, pressure in the
 20 cavity 13 is thus permitted to build up, until the desired amount is reached for the operations of the oil well, to which this valve is adapted to be connected.

Having described my invention, I claim:
 25 1. In a valve mechanism, a casing having an exhaust channel therethrough, a valve seat, said channel passing through said valve seat, a disk adapted to fit and close said seat, holding means adapted to normally hold said exhaust chamber closed, to
 30 stop communication through said channel, a pressure member actuated by pressure communication with the inlet side of said channel, said pressure member being connected to said disk and adapted to lift the
 35 same against the action of the holding means,

there being a communication between said member and said channel, adapted to bring a counter pressure upon said member to permit said holding means to close said valve, 40 and means adapted to dissipate the said counter pressure.

2. In an exhaust-choke-valve, a casing having an inlet and an outlet opening, there being a channel between said openings, a 45 valve positioned in said channel, a valve disk adapted to close the same, a valve stem connected with said valve disk, pressure resisting means normally closing said valve, a pressure actuated device connected with said 50 stem, and exposed on one side to said channel, there being a communicating duct leading from the periphery of said disk to the opposite side of said device to counteract the channel pressure on the same, and means 55 regulating the said counter pressure.

3. In a cocking valve, a casing having an inlet and an outlet opening, said openings being connected by a channel, a valve positioned in said channel, a valve disk adapted 60 to close the same, a valve stem connected with said valve disk, a tension spring for normally closing said valve, a pressure actuated device connected with said stem, and exposed on one side to said channel, there 65 being a communication leading from said disk to the opposite side of said device, in order to counteract the channel pressure on the same, and regulating means for effecting the counter pressure.

MILES W. QUICK.