F. S. PEASE.

THREE WAY COCK.

No. 48,430. Patented June 27, 1865.

Fig: 2.

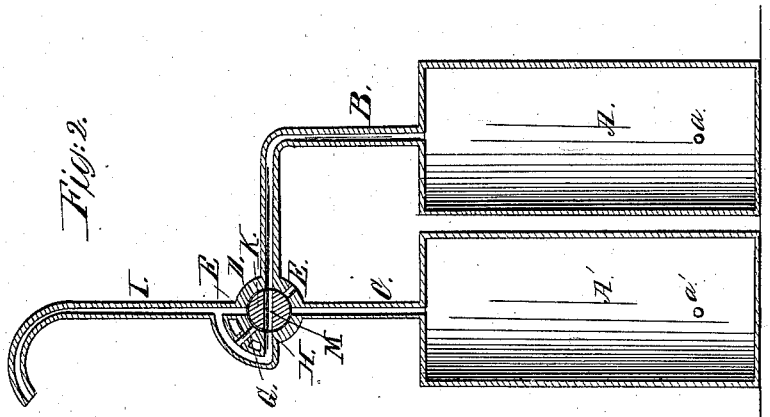
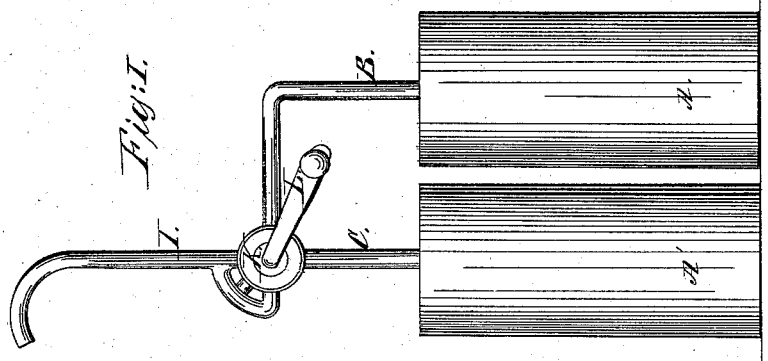


Fig: 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

F. S. PEASE, OF BUFFALO, NEW YORK.

IMPROVEMENT IN THREE-WAY COCKS.

Specification forming part of Letters Patent No. **48,430**, dated June 27, 1865.

To all whom it may concern:

Be it known that I, F. S. PEASE, of Buffalo, in the county of Erie and State of New York, have made a new and useful Improvement in Three-Way Cocks adapted to apparatus in which an intermittent pressure is required; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, which are made part of this specification, and in which my invention is illustrated, in—

Figure 1, by an elevation, and in Fig. 2 by a central vertical sectional view.

Similar letters refer to like parts in the two figures.

The improvement consists of a rotary valve operating in connection with suitable ports, and which is adapted to connect the pipe of an oil-well, which is alternately a blast and an exhaust pipe, with the receptacle containing condensed air, with the outer air, and with the vacuum-chamber.

The special object of the device is to make the requisite connections in a speedy, simple, and economical manner, avoiding unnecessary complication and expense of construction. I use for this purpose a rotary valve having a single passage or port passing through it, and moving within a seat or casing which has three ports leading to the blast and exhaust tube, and opposite to them three ports which lead respectively to the compressed-air chamber, to the outside open air or exhaust-pipe, and to the vacuum-chamber.

A A′ are two cylinders, which connect by ports *a a′* with a pump-cylinder, by which the chamber A is supplied with compressed air, and by which the chamber A′ is exhausted.

B C are pipes leading from the chambers A A′ and terminating in the valve-seat D. Between their respective terminations or ports is another one, E, which opens into the open air or to an exhaust-pipe, as may be desired. On the other side of the valve-seat, and opposite to the three openings referred to, are three other openings, F G H, which, however, all unite in the pipe I, to proceed to the oil-well, or other deep well, where the operation I am about to describe may be available.

It may assist in understanding the device to be informed that the pipe I, which proceeds to the well, may be employed to conduct down a column of compressed air, which, impinging upon the surface of the oil that is prevented by a lower valve from flowing back, causes the said oil to rise in an outer or encircling tube, where its elevation is maintained by another valve. The column of air being now withdrawn and a partial vacuum secured, the weight of the atmosphere causes another body of oil to enter at the lower valve, and, being filled to the former extent, it is again in condition to be forced upward by the current of air, as above described.

The valve K is a strong conical or cylindrical valve, and is revolved by the crank L. It has one port, M, passing through it transversely to its axis.

The operation is as follows: The cylinder A being filled with compressed air through the port *a*, and the valve K being in the position represented in Fig. 2, the compressed air passes to the well to perform the office above described. To release the pressure, the valve is rotated in the direction of the arrow, and as soon as it has made one-eighth of a revolution the exhaust-port E is opened to allow the compressed air in the pipe to flow back and restore the equilibrium. The further rotation of the valve brings the pipe C in connection with the port M, and by the exhaust-chamber the air in the pipe is withdrawn and a partial vacuum established therein, which has the effect described above of causing oil to flow in through the lower valve-aperture into the pipe at the bottom of the well. The continuance of the rotation with the required rapidity brings the intermittent pressure upon the column of oil in the well-tube and produces the effect desired.

The apparatus may be made to answer for several wells with the proper branch-pipe connection and faucets in the pipes to direct the operation to the required place.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The rotary valve K, with a through-port, M, rotating in a casing provided with ports, which connect on one side with the chamber of condensed air A, with the vacuum-chamber A′, and with the exhaust-opening E, and on the other side with corresponding opposite ports, which connect with the well-pipe I, all substantially as and for the purpose described.

To the above specification of my improvement in valves I have signed my hand this 13th of March, 1865.

F. S. PEASE.

Witnesses:

ALEXR. A. C. KLAUCKE,
EDWARD H. KNIGHT.