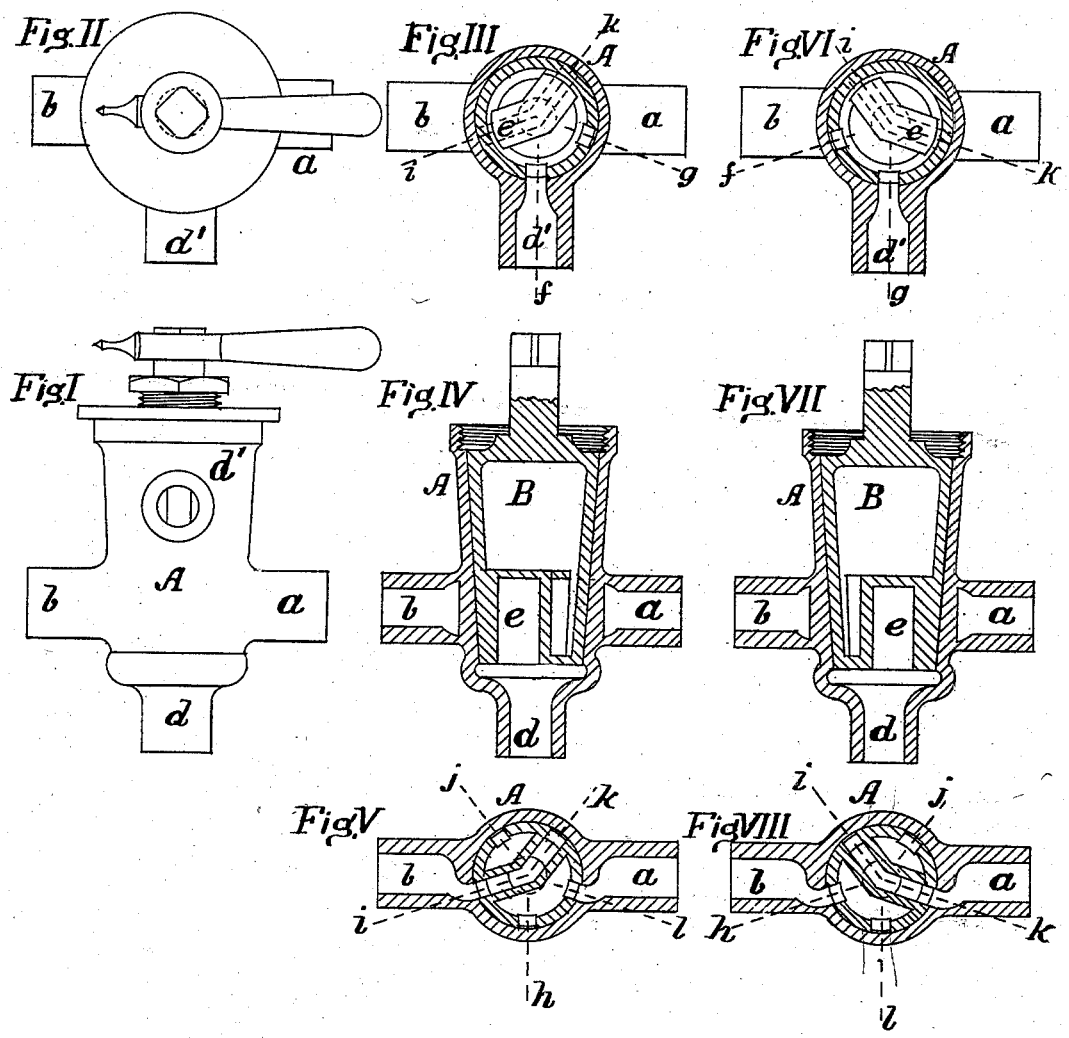
E. B. QUICK.

Reverse-Way Cook.

No. 205,209. Patented June 25, 1878.



Witnesses.

N. W. Wheeler,

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ELIAS B. QUICK, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN REVERSE-WAY COCKS.

Specification forming part of Letters Patent No. **205,209**, dated June 25, 1878; application filed March 27, 1878.

To all whom it may concern:

Be it known that I, ELIAS B. QUICK, of the city of Brooklyn, Kings county, New York, have made a new and useful Improvement in Reverse-Way Cocks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

The object of this invention is to provide simple means of governing and reversing the flow of liquids through vessels, such as filters, chemical apparatus, and the like, and of establishing the flow through service-pipes past such vessel, filter, or apparatus at the will of the operator.

Figure I is an elevation of my reverse-way cock. Fig. II is a plan; Fig. III, a horizontal sectional plan; Fig. IV, a sectional elevation; Fig. V, a sectional plan. Figs. VI, VII, and VIII are sections similar to Figs. III, IV, and V, showing the parts in different relative positions.

A is the shell, fitted to receive the plug B. Upon the shell A are four branches, *a*, *b*, *d*, and *d'*. The branch *d'* terminates in the shell A as a port, to match the ports *f* and *g* in the plug B. The branches *a* and *b* also terminate in the shell A as ports, to match a series of five ports, *h*, *i*, *j*, *k*, and *l*, in the plug B. The branch *d'* is at so great a longitudinal distance from the branches *a* and *b* that the two series of ports in the plug B do not overlap each other.

The lower series of ports *h*, *i*, *j*, *k*, and *l* in the plug B are spaced at equal circumferential distances from each other, so that one-fifth of a revolution of the plug B will bring the next succeeding port opposite either given port of the branch *a* or *b*. The ports of *a* and *b* do not open into the shell A upon a diametric line, but are so far removed from it that when one of the five ports in the series *h i j k l* matches *a* another will match *b*, as seen in Fig. V, where *l* matches *a* and *i* matches *b*. The port *f* is in line with the port *h* and the port *g* is in line with the port *l*. The plug B is closed at both ends; but the closing-diaphragm at the smaller end is flexed upward or inward, so as to make the ports *i* and *k* open through the walls of the plug below or externally to the hollow body of the plug B, while all the other ports, *h*, *j*, *b*, *f*, and *g*, open into the common hollow body of the plug B.

The above-described flexure of the diaphragm forms the channel *e*, which is always open to the branch *d*.

Now, let it be supposed that the branches *a* and *b* be connected to service-pipes, *a* being the inlet and *b* the outlet, and also let it be supposed that the branch *d'* is connected by a suitable pipe with one compartment of a filtering device or similar contrivance, and that the branch *d* is similarly connected to another compartment, and that there is filtering or chemical material between these compartments, through which it is desired to cause a flow of liquid by virtue of a preponderance of pressure existing in *a*.

If the plug B be placed as shown in Figs. III, IV, and V, the fluid will pass into the body of the plug B through *a* and *b*, and into *d'* through *f*, and enter one compartment, pass through the filtering or chemical material to the opposite compartments, thence to the branch *d*, thence through the channel *e*, port *i*, and out through the branch *b*. If the plug B be now turned one-fifth of a revolution to the position shown in Figs. VI, VII, and VIII, the liquid will flow through *k* and *e* to *d*, and pass through the compartments and filtering or chemical material in the opposite direction to that before described, and pass out through *d'*, *g*, *h*, and *b*. If the plug be again turned one-fifth of a revolution in the same direction as before, the ports *h* and *k* will match the ports of *a* and *b*, and all the other ports will be closed, so that the liquid will pass directly from *a* to *b* through the hollow body of the plug B. If the plug B be turned one-tenth of a revolution from any of the positions above indicated, none of the plug-ports will match a shell-port and the flow of liquid will be arrested.

It will be observed that the ports of *a* and *b* open into the shell extra diametrically—that is to say, aside from any diameter passing through the axis, and so far aside as to make the ports of *a* and *b* match or coincide with ports in the plug spaced one-fifth of a circumference apart, from middle to middle, and, again, so far aside as to give the ports of *a*

and *b* the appearance of being closed in those figures which are sections upon the axis of the shell and plug, while the cross-sections through the branches *a*, *b*, and *d'* show clearly the construction of the parts.

I claim—

1. The extra diametrical arrangement of the ports of *a* and *b*, in combination with the series of ports *h i j k l* and channel *e*, substantially in the manner and for the purposes described.

2. The combination of the shell A, having the four branches *a*, *b*, *d*, and *d'*, with the plug B, having the channel *e* and ports *f*, *g*, *h*, *i*, *j*, *k*, and *l*, arranged substantially in the manner and for the purposes described.

ELIAS B. QUICK.

Witnesses:
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