No. 637,424. Patented Nov. 21, 1899.

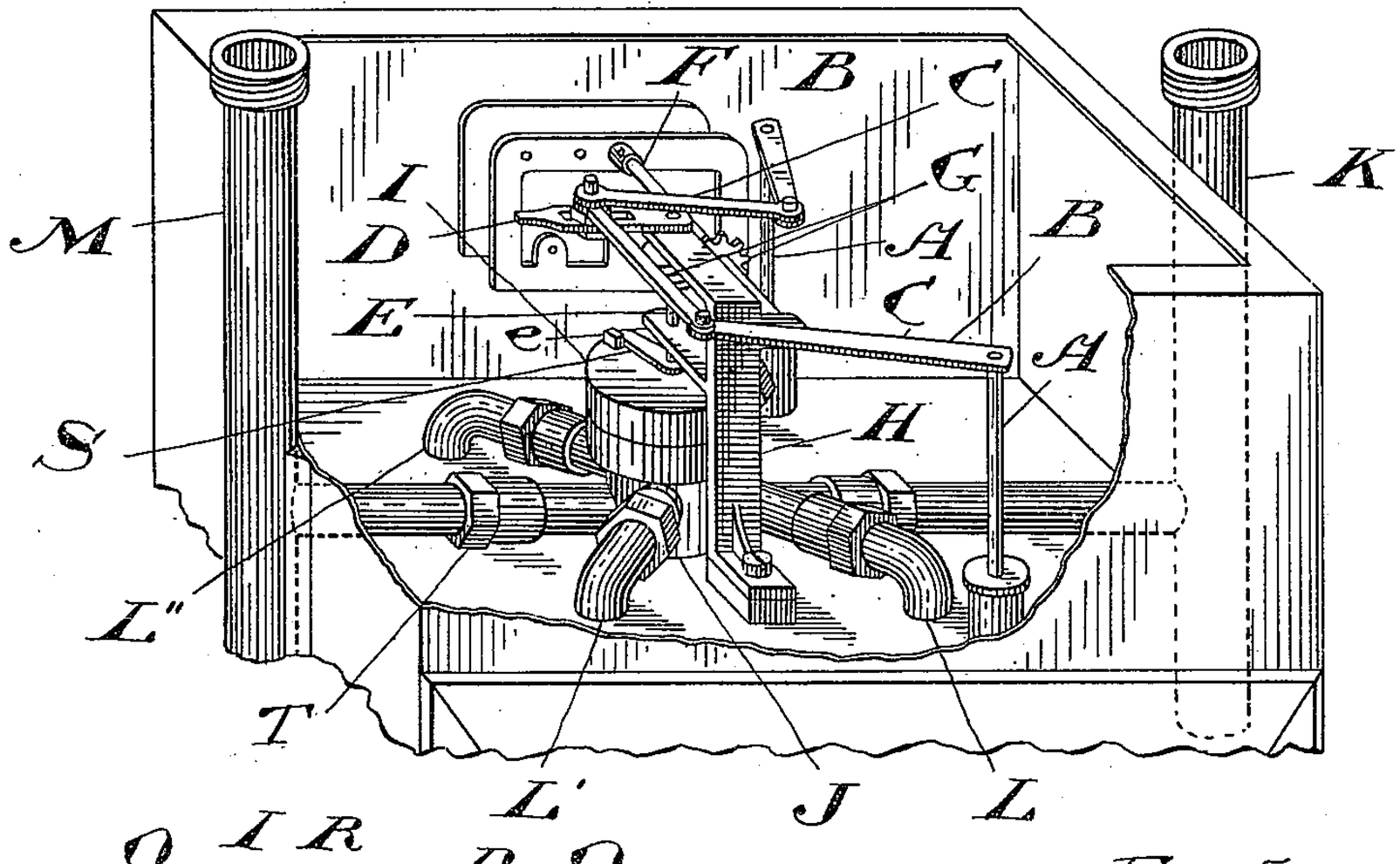
J. SEYMOUR.

VALVE FOR GAS METERS.

(Application filed May 3, 1899.)

(No Model.)

Fig. 1.



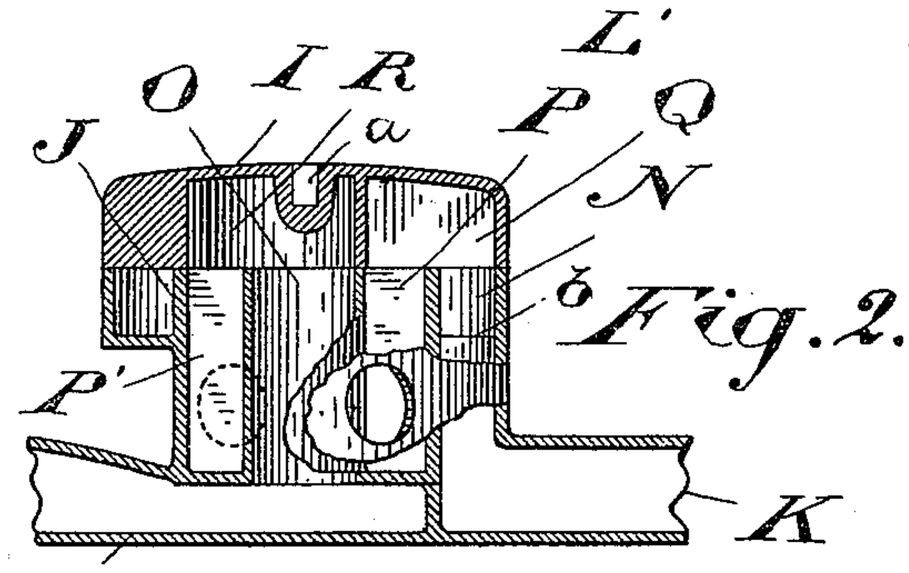


Fig. 2.

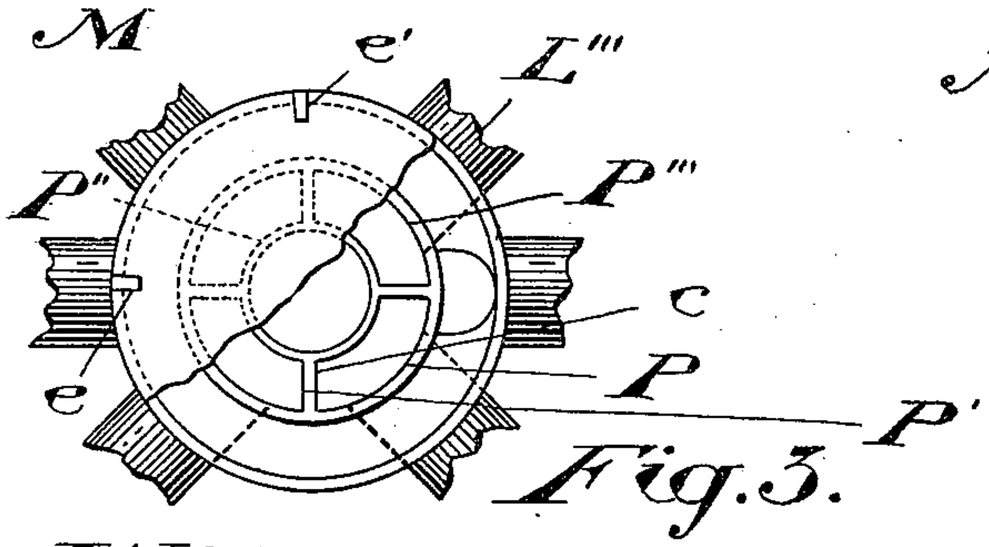
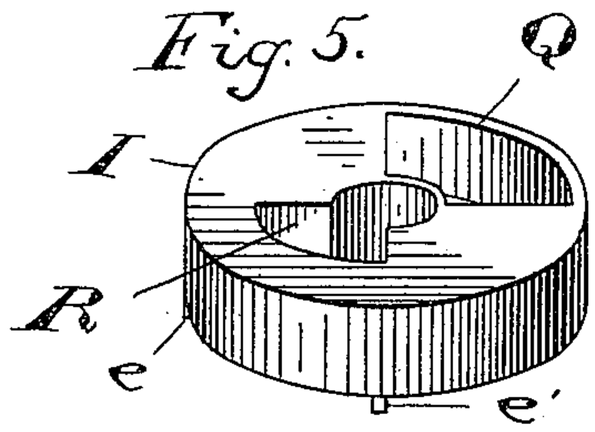


Fig. 3.

Fig. 5.



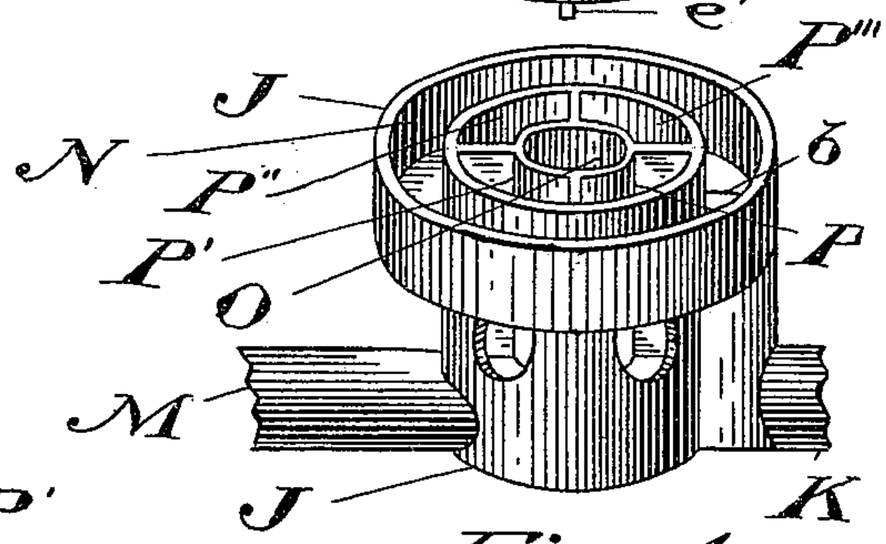


Fig. 4.

Witnesses

Q. J. Colbourne.

N. C. Dickson.

Inventor

John Seymour

by Lidout & Maybee

attys.

UNITED STATES PATENT OFFICE.

JOHN SEYMOUR, OF BRAMPTON, CANADA.

VALVE FOR GAS-METERS.

SPECIFICATION forming part of Letters Patent No. 637,424, dated November 21, 1899.

Application filed May 3, 1899. Serial No. 715,413. (No model.)

To all whom it may concern:

Be it known that I, JOHN SEYMOUR, manager, of the town of Brampton, in the county of Peel and Province of Ontario, Canada, have invented certain new and useful Improvements in Valves for Gas-Meters, of which the following is a specification.

The object of my invention is to simplify the mechanism for controlling the passage of gas in the meter and to make it readily removable for repairs; and it consists, essentially, of a valve-seat having detachable connections with the gas-spaces of the meter, the inlet-pipe, and the outlet-pipe, and of a rotary valve, the parts of the valve-seat and valve veing provided with suitable ports and so shaped that the ports to the gas-spaces of the meter are successively placed alternately in connection with the inlet and outlet pipes of the meter by the rotation of the valve. The standard supporting the mechanism for rotating the valve is also preferably detachably secured to the meter, and the parts are constructed in detail substantially as hereinafter more specifically described and then definitely claimed.

Figure 1 is a perspective view of a portion of a gas-meter provided with my improved valve. Fig. 2 is a vertical sectional elevation of the valve. Fig. 3 is a plan of the same with parts broken away to show the interior construction. Fig. 4 is a perspective view of the valve. Fig. 5 is an inverted perspective of the cap.

In the drawings like letters of reference indicate corresponding parts in the different figures.

Although my invention relates solely to the construction of the valve and its method of connection, I will briefly describe those portions of the meter immediately connected therewith.

A are the flag-wires, which derive a rocking motion from the diaphragms of the meter in any well-known manner. Arms B are rigidly connected to the upper ends of the flag-wires. The other ends of these arms are pivotally connected to the links C, which themselves have an adjustable pivoted connection to the tangent D, which is rigidly secured to the upper end of the valve-spindle E. From this valve-spindle the indicator-spindle F derives its motion by means of the worm-gearing G. Those skilled in the manufacture of meters will readily understand that by the rocking of the flag-wires a rotary motion is imparted to the valve-spindle E. This valve-spindle, as well as the inner end of the indicator-spindle, is journaled in a bracket-standard H, which is detachably secured, as shown, to the bottom of the upper portion of the meter. The lower end of the valve-spindle E rests in a step *a*, formed in the top of the valve I of the valve-seat J.

It is of course understood that in dry meters using diaphragms connections have to be provided to convey the inflowing gas from the inlet-pipe to the inside and outside of each diaphragm, thus in a two-diaphragm meter necessitating four connections, which must be alternately connected with the inlet-pipe from the main and the outlet-pipe to the house-service.

In Fig. 1, K is the inlet-pipe, M the outlet-pipe, and L, L′, L″, and L‴ the connecting-pipes above referred to. As there is absolutely no novelty in their connections to the inside and outside of the diaphragms and as such connections form no part of the present invention, they are not illustrated in the drawings. The inlet-pipe K has connection by means of the port *b* with the annular space N, surrounding the valve. The outlet-pipe M is connected with the central outlet-port O. The connecting-pipes L L′ L″ L‴ are connected, respectively, with the ports P P′ P″ P‴, which are separated from one another by the radial divisions *c*. The valve I has the inlet-recess Q formed therein, which is so shaped and proportioned as to be capable of embracing one of the ports P P′ P″ P‴ and a segment of the annular space N. This valve has also formed therein the outlet-recess R, which is shaped and proportioned that it may be made to register exactly with one of the aforesaid ports opposite to that with which the inlet-recess is registered and also with the outlet-port O. As the radial divisions *c* are comparatively narrow, the inlet and outlet recesses would only register with opposite ports for a comparatively brief space of time, and for the most part they af-

ford connection between two ports and the gas-supply and between the two opposite ports and the outlet-port.

Upon the upper face of the valve I are located two studs *e e'*, preferably separated somewhere about ninety degrees apart. Between these studs upon the spindle E is secured an arm S. When the meter is working, this arm engages with the stud *e*. If any attempt is made to work the meter backward, the arm S moves around into contact with the stud *e'*, and the working of the valve is immediately deranged. When the valve is set up in a meter and operatively connected, the port P connects with the inside of one diaphragm, the port P' connects with the inside of the other diaphragm, the port P'' with the outside of the first diaphragm, and the port P''' with the outside of the second diaphragm.

From the description given above it will be readily seen that my improved valve places the inside of the first diaphragm in connection with the gas-supply at the same time that the outside of the said diaphragm is connected with the outlet-port and that as the valve revolves the inside and outside of each diaphragm are alternately placed in connection with the gas-supply and the outlet-port. It is essential that no gas be within the top of the meter, as it will have a tendency to escape through the dial of the registering apparatus. By connecting the inlet-pipe with the annular space N, which is covered by the valve I, I avoid the necessity of allowing gas to fill the top of the meter or the alternative, which is to cover the valve with a closed casing, which must be torn open to get at the valve for repairs. As in my invention the whole of the work is done by a single valve, I considerably reduce the number of working parts and simplify their operation. I am also enabled to make the valve readily removable for repairs. It will be noticed that the inlet and outlet pipes and the various connecting-pipes are provided with unions or couplings T. By unscrewing these couplings and by detaching the bracket-standard H the valve and its connected parts may be easily removed. The links C are always loosely connnected with the adjustable connection upon the tangent D, and are hence easily disconnected when it is desired to remove the valve.

What I claim as my invention is—

1. In a meter, a valve-seat having a central outlet-port, an annular inlet-space and two or more intermediate ports of equal size diametrically opposite each other, in combination with a rotary valve provided with an inlet-recess adapted to place any of said intermediate ports in communication with the inlet and an outlet-recess diametrically opposite the inlet-recess adapted to place the opposite intermediate port in communication with the outlet-port, substantially as and for the purpose specified.

2. In a meter, a valve-seat having an outlet-port and an inlet-space, and four or more ports of substantially equal size diametrically opposite each other, in combination with a rotary valve provided with inlet and outlet recesses diametrically opposite each other and arranged to place certain ports in communication with said inlet-space of the valve-seat and simultaneously place the diametrically opposite ports in communication with the said outlet-port of said valve-seat, substantially as and for the purpose specified.

3. In a meter a valve-seat having a central outlet-port and four equal ports diametrically opposite each other surrounding said outlet-port in combination with a rotary valve provided with an inlet-recess adapted to register with any given port of the four and an outlet-recess diametrically opposite the said inlet-recess adapted to place the opposite intermediate port in communication with the outlet-port, substantially as and for the purpose specified.

4. In a meter the valve-seat J, provided with the outlet-port O; the outlet-pipe M, communicating therewith; the annular space N, the inlet-pipe K, communicating therewith; the ports P, P', P'' and P''', and the pipes L, L', L'', and L''' communicating therewith, in combination with the valve I, provided with the inlet-recess Q, and the outlet-recess R, substantially as and for the purpose specified.

5. In a meter the valve-seat J, provided with the outlet-port O; the outlet-pipe M, communicating therewith; the annular space N, the inlet-pipe K, communicating therewith; the ports P, P', P'', and P'''; the pipes L, L', L'', and L''' communicating therewith and union joints or couplings in the said pipes, in combination with the valve I, provided with the inlet-recess Q, and the outlet-recess R, substantially as and for the purpose specified.

6. In a meter the valve-seat J, provided with the outlet-port O; the outlet-pipe M, communicating therewith; the annular space N, the inlet-pipe K, communicating therewith; the ports P, P', P'', and P''' and the pipes L, L', L'', and L''' communicating therewith in combination with the valve I, provided with the inlet-recess Q, and the outlet-recess R, the valve-spindle E, suitably journaled and having one end set within a recess or step in the valve; the arm S, rigidly connected to the said spindle; and the studs *e e'* on the valve, substantially as and for the purpose specified.

Brampton, Canada, April 27, 1899.

JOHN SEYMOUR.

In presence of—
JOHN G. RIDOUT,
N. C. DICKSON.