Sheet 1. 2 Sheets.

Rufus B. Chapman's
Valve for Gas Apparatus.

117602

PATENTED AUG 1 1871

Fig. 1

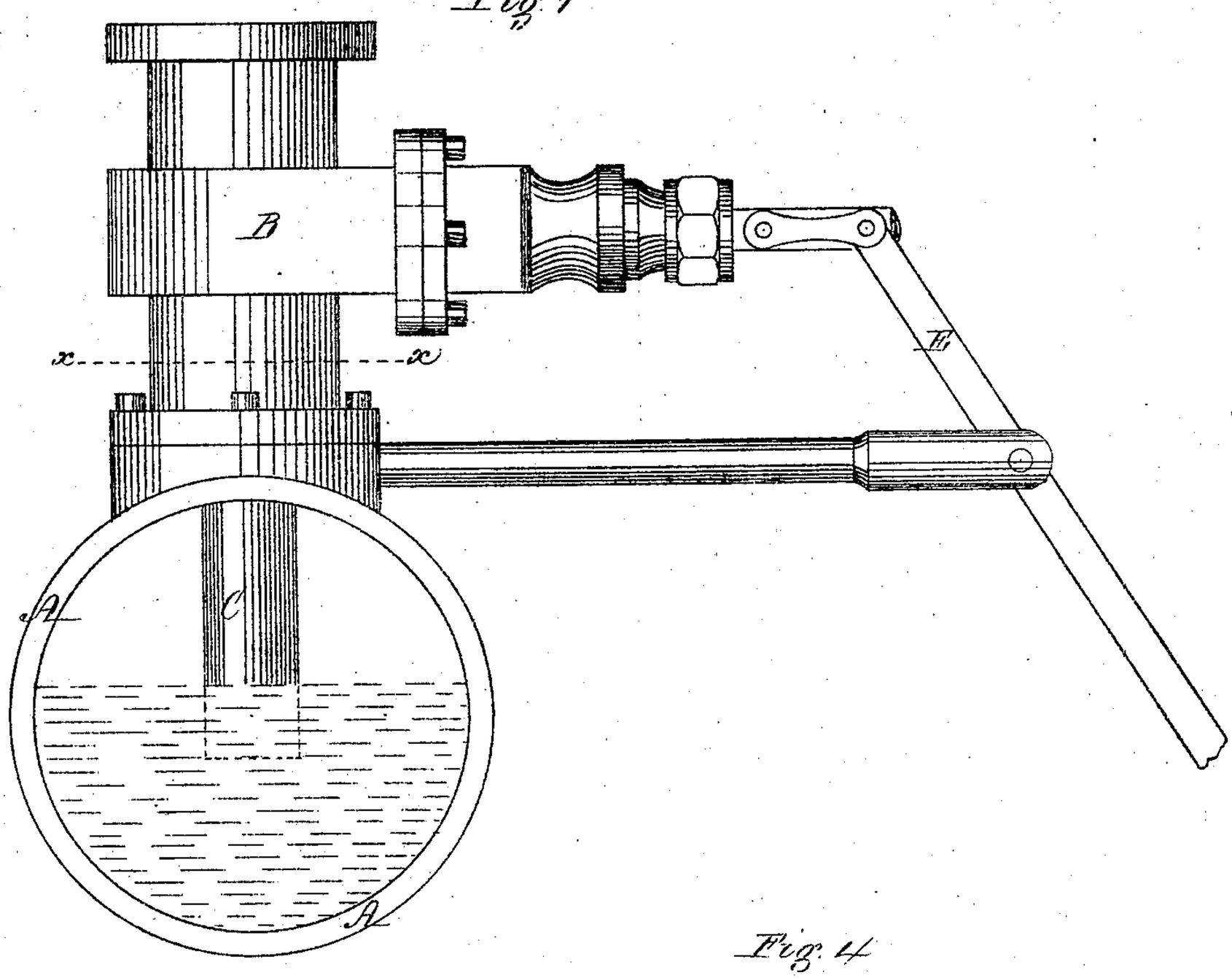
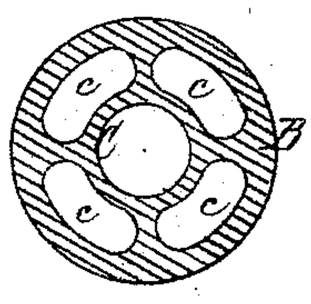


Fig. 4



Witnesses
H. E. Deshamacher
W. J. Cambridge

Inventor,
Rufus B. Chapman

Sheet 2 - 2 Sheets.

Rufus B. Chapman's
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117602

Fig. 2

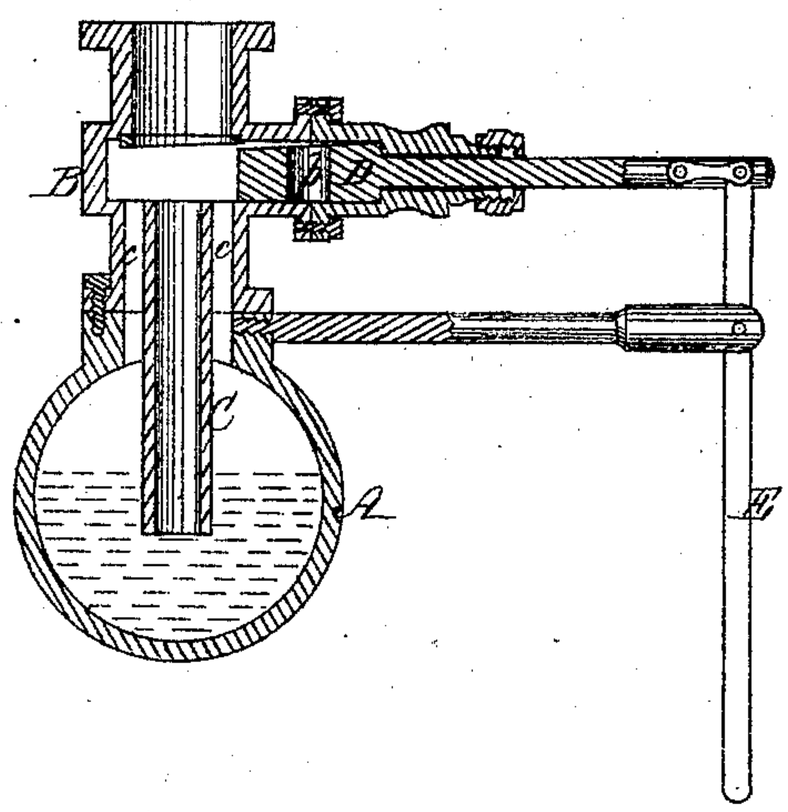
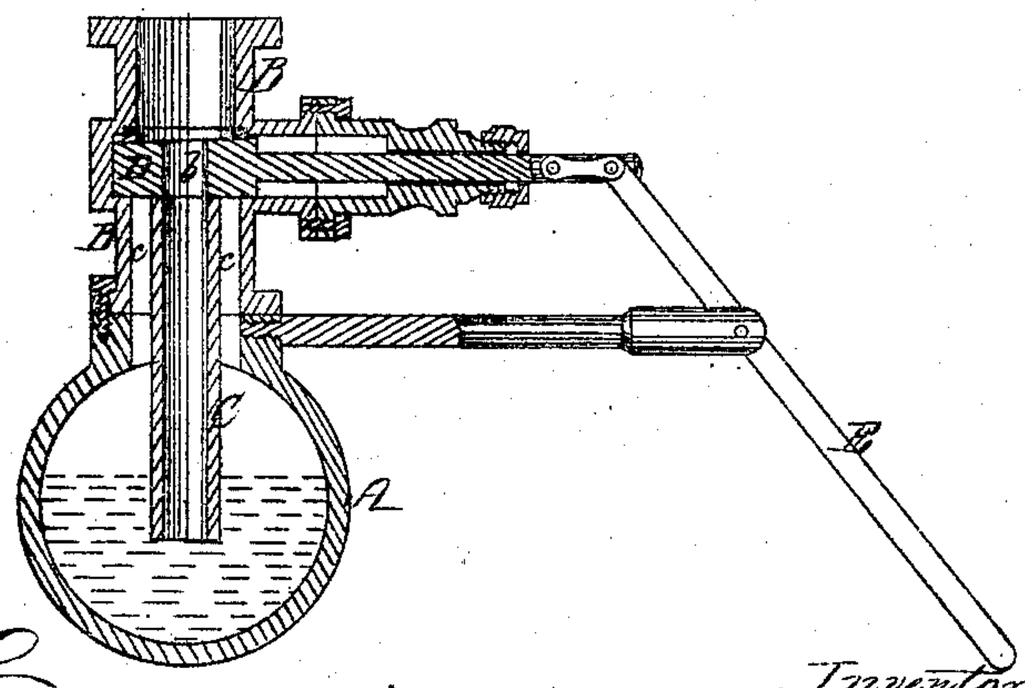


Fig. 3.



Witnesses,
F. E. Teschemacher
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Inventor,
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Reissued Mar. 12th 1872.

117,602

UNITED STATES PATENT OFFICE.

RUFUS B. CHAPMAN, OF WALTHAM, MASSACHUSETTS, ASSIGNOR TO JOHN C. CHAPMAN, OF SAME PLACE.

IMPROVEMENT IN SEALING DIP-PIPES OF GAS APPARATUS.

Specification forming part of Letters Patent No. 117,602, dated August 1, 1871.

To all whom it may concern:

Be it known that I, RUFUS B. CHAPMAN, of Waltham, in the county of Middlesex and State of Massachusetts, have invented an Improved Valve for Apparatus for the Manufacture of Coal-Gas, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is an end elevation of the hydraulic main of a gas apparatus with my improved valve applied thereto. Fig. 2 is a section through the same with the valve open. Fig. 3 is a section through the same with the valve closed. Fig. 4 is a section on the line *x x* of Fig. 1.

This invention relates to an improved valve to be used in apparatus for the manufacture of coal-gas; and consists in a combined valve and "dip-pipe," the dip-pipe extending up within the shell of the valve and communicating directly with the pipe leading to the retort, through an opening in the plug when the valve is closed, while when the valve is open the gas will flow freely and without pressure from the retort through one or more passages in the shell of the valve to the hydraulic main, by which construction I am enabled to operate the retort without pressure, and thus secure all of the advantages resulting therefrom, while in the event of the valve or cut-off being allowed to remain closed through negligence during the production of the gas it will pass from the retort through the dip-pipe into the hydraulic main in the ordinary manner, whereby all danger of explosion or accident incident to the introduction of an ordinary valve or stop-cock between the retort and the hydraulic main is avoided and the apparatus rendered perfectly safe under any circumstances.

I am aware that gas apparatus have been constructed in which dip-pipes have been dispensed with and the retorts operated without pressure, by the introduction of a valve at some convenient point between the retort and hydraulic main, such as is shown in the patent of William Gibson, October 5, 1869. This apparatus, however, is liable to accident in the event of neglect in opening the valve.

To overcome the objections referred to, gas apparatus have also been constructed in which a supplemental pipe has been added having a valve or cut-off, and used in combination with the ordinary dip-pipe, as shown in the patent of Edward Jones, dated June 27, 1871. This arrangement is objectionable as not being adapted to gas apparatus already in use, and is liable to become fouled, and the valve has to be removed for cleansing, while my device is more simple, is cheaply applied to gas apparatus already in use, and the sliding valve removes the tar and sediment from the passages, and automatically the apparatus keeps itself in working order.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawing, A represents the hydraulic main of a gas apparatus, to the top of which is secured a valve, B, to which the "bridge-pipe" leading from the retort is intended to be attached. C is a dip-pipe, which extends up into the interior of the valve and forms a part thereof, the lower end of the pipe C descending into the liquid contents of the main so as to form a "dip-seal." D is a sliding plug, which is operated by the lever E, and is provided with an aperture, *b*, which, when the valve is closed, as seen in Fig. 3, lies over the upper end of the dip-pipe and opens a communication between it and the retort. Within the shell of the valve and around the exterior of the dip-pipe is formed a series of passages, *c*, which open into the hydraulic main, and when the valve is closed these passages are tightly covered by the plug D, as seen in Fig. 3.

The charge may now be drawn from the retort, as the communication between it and the hydraulic main A, through the passages *c*, is effectually cut off, and the gas cannot flow back to the retort through the dip-pipe, as its lower end is sealed in the liquid contents of the main. As soon as the retort has been charged the plug D is withdrawn by means of the lever E, when the gas will flow freely and without pressure through the passages *c* into the hydraulic main A. Should the valve, however, be allowed to remain closed through the negligence of the person in charge during the production of the gas, it will pass under pressure through the aperture *b* in the plug D to the dip-pipe C, and thence into the hydraulic main in the ordinary manner, thus effectually preventing any possibility of explosion or accident.

The above-described combined valve and dip-pipe is of simple construction, can be readily and cheaply applied to gas apparatus already in use,

and can be very easily cleaned, while the tar and sediment are scraped away from the passages *c* and the mouth of the dip-pipe by the sliding plug when the latter is operated.

What I claim as my invention, and desire to secure by Letters Patent, is—

The within-described combined valve and dip-pipe, the valve being provided with one or more passages, *c*, through which the gas may pass without pressure from the retort to the hydraulic main when the valve is open, and a plug, D, having an aperture, *b*, which opens a communication between the retort and the hydraulic main through the dip-pipe C when the valve is closed, substantially as and for the purpose described.

Witness my hand this 6th day of July, A. D. 1871.

RUFUS B. CHAPMAN.

Witnesses:
P. E. TESCHEMACHER,
W. J. CAMBRIDGE.