W. A. SIMONDS.

Gas Regulator.

No. 49,449. Patented Aug. 15, 1865.

Fig. 1

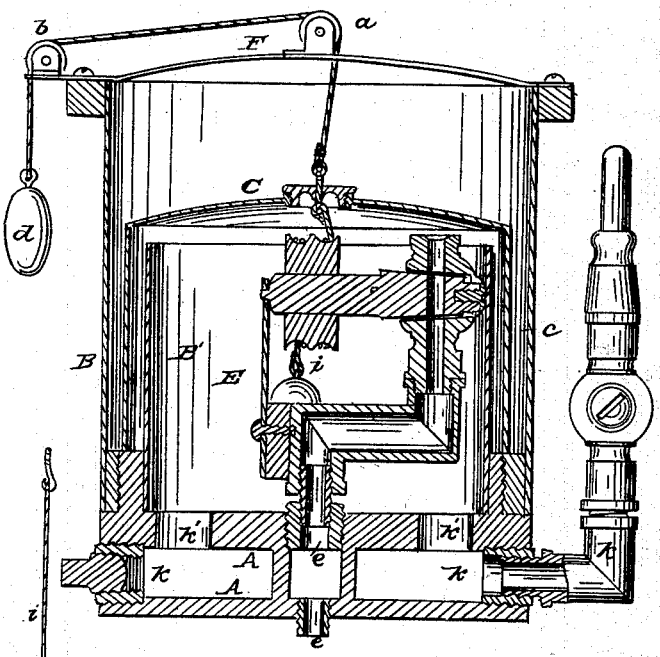


Fig. 3

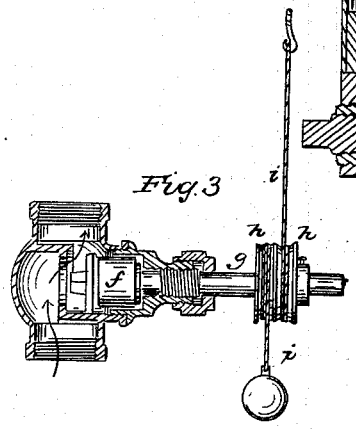
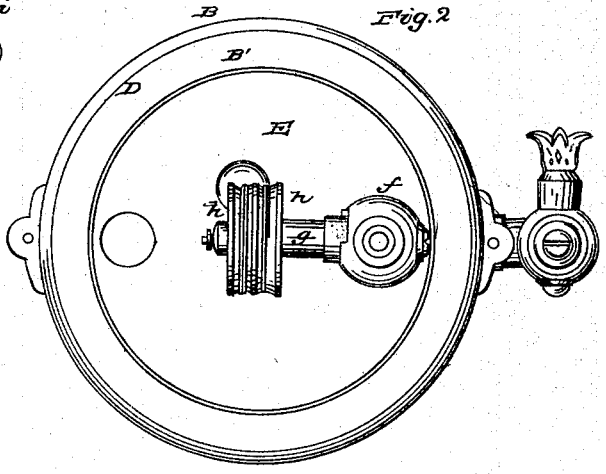


Fig. 2



Witnesses

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UNITED STATES PATENT OFFICE.

WARREN A. SIMONDS, OF BOSTON, MASSACHUSETTS.

IMPROVED APPARATUS FOR REGULATING THE PRESSURE AND DELIVERY OF GAS.

Specification forming part of Letters Patent No. **49,449**, dated August 15, 1865.

To all whom it may concern:

Be it known that I, WARREN A. SIMONDS, of Boston, county of Suffolk, and State of Massachusetts, have invented a new and Improved Apparatus for Regulating the Pressure and Delivery of Carbureted Air, Gas, &c.; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section. Fig. 2 is a top view with the holder removed; and Fig. 3 shows a screw regulator-valve with pulley, &c., for operating the same.

The nature of my invention relates to the construction and arrangement of parts of an apparatus for regulating the pressure and delivery of destructively-distilled or other gases, air, water, or other liquids where uniform delivery is required; and it consists, first, in constructing the holder in the form of a double cylinder, both of which are attached to the same base and made tight, so as to form a double reservoir, the outer of which, between the cylinders, contains water, oil, or other suitable liquid packing, as hereinafter described, and the inner, which is the inside of the small cylinder, for holding the carbureted air or gas; second, in combining with the double cylinder reservoir, as above, the necessary opening for the reception and discharge of the gas, as hereinafter specified; third, in combining with a double cylinder, as above, a floating holder or reservoir, open at the bottom but tightly closed at top, the said reservoir to float in the outside reservoir and between the two cylinders, as hereinafter described; fourth, in combining with the inlet-opening to the inside reservoir a plug or screw valve connected with a reversible double pulley or other equivalent means operated by a cord or cords one end of which is connected to the top inside of the floating holder, while the other end has a weight attached sufficient to reverse and open the cock or valve when the holder falls, as hereinafter described; and, fifth, in an arrangement of pulleys, cords, and weight in connection with the floating holder.

In the drawings, A represents the base, which in this instance forms also the top of a carbonizing apparatus, and to this base the two upright drums or cylinders B and B′ are tightly secured. The inner cylinder is from one to two inches (more or less) smaller in diameter, leaving sufficient space to insert between them a third cylinder or floating holder, C, open at bottom and closed at top. The outer reservoir, D, or space between cylinders B B′, is to contain water, oil, or other suitable liquid for packing and preventing the escape of the gas, &c., from the inside reservoir, E.

F is a cross-piece, provided with pulleys *a b*, over which the cord C runs, said cord being attached to the center of holder C, and provided with a weight, *d*, for sustaining in part the weight of the holder, and thereby regulating the pressure more or less as may be required.

e is an inlet-opening through which the carbonized air, gas, water, or other fluid passes from the carbonizing-machine into holder or regulator C.

C″ is an opening or man-hole in the top of holder C, which may be closed by any suitable means, as shown, and is for the purpose of adjusting the valve-cords.

f is a valve or cock, which may be made in any usual, as globe or screw, form; but for practice I prefer the screw-valve as less abrupt and better serving to graduate the supply. This valve is operated by its connection with shaft *g*, which is furnished with the double pulley *h h*, having cords *i i′* attached at one end, the other ends of which are attached, that of *i* to the inside top of the holder C, and that of *i′* to a weight to turn the pulley and the valve connected therewith when the holder falls.

The operation is as follows: The valve being open, the supply of carbureted air or other gaseous or liquid substance through the valve is free and unobstructed until sufficient quantity is received to slightly raise the floating holder, when the holder, through the cord and pulley, acts upon the valve, gradually closing the same. Now, until a means of escape is provided there can be no further supply. The moment a vent is created, as by the lighting of burners connected with the holder through suitable pipes at one or more points, *k*, or otherwise, the weight, acting on the pulley as the holder falls, gradually opens the valve until such a position of the valve is attained as makes the supply to the holder just equal to the demand thereon.

When connected with an automatic carbureting apparatus such as described in my former patents and in another application filed herewith the operation will be readily appre-

ciated, as the gradual closing of the valve by the falling and rising of the holder graduates the manufacture of the burning material until the valve closes, when the carbureter ceases to operate, there being no further escape of the manufactured material.

The parts are susceptible of variation in form without departure from the principle of construction herein described and shown. For instance, the graduating-valve may be connected with the outlet from, instead of the inlet to, the regulator or holder, and the pulley *h* may be single instead of double, as shown, &c.

It is obvious that this regulator may be applied in a different manner from that shown, and may be used wherever a uniform delivery of any gaseous or liquid substance is desirable or necessary.

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

1. In combination, the double cylinders B B′, the bell C, and the interior mechanism or its equivalent, as shown, for the purpose specified.

2. A double-cylinder reservoir with two or more openings in and through the bottom, one for the inlet, others for outlet or outlets within the inside reservoir, in combination with the regulator-valve shown in Fig. 3, or its equivalent, as set forth.

3. The construction of a floating reservoir, open at the bottom but tight at the top, with a man-hole at its center for connections from the in and out side, the said reservoir to float in the outside reservoir and between the in and out side cylinders when used, for purposes herein described.

4. Connecting to the inlet-opening upon the inside a plug or screw valve with a reversible double pulley to be operated by a cord or cords, one end of which is connected upon the inside of the top of the floating holder, while on the end of said cords is a weight sufficient to reverse and open the cock or valve when the holder falls, as specified.

5. The arrangement of the pulleys in the cross-piece F and the cord and weight, in combination with the floating holder for sustaining in part the weight of the holder, as specified.

WARREN A. SIMONDS.

Witnesses:

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