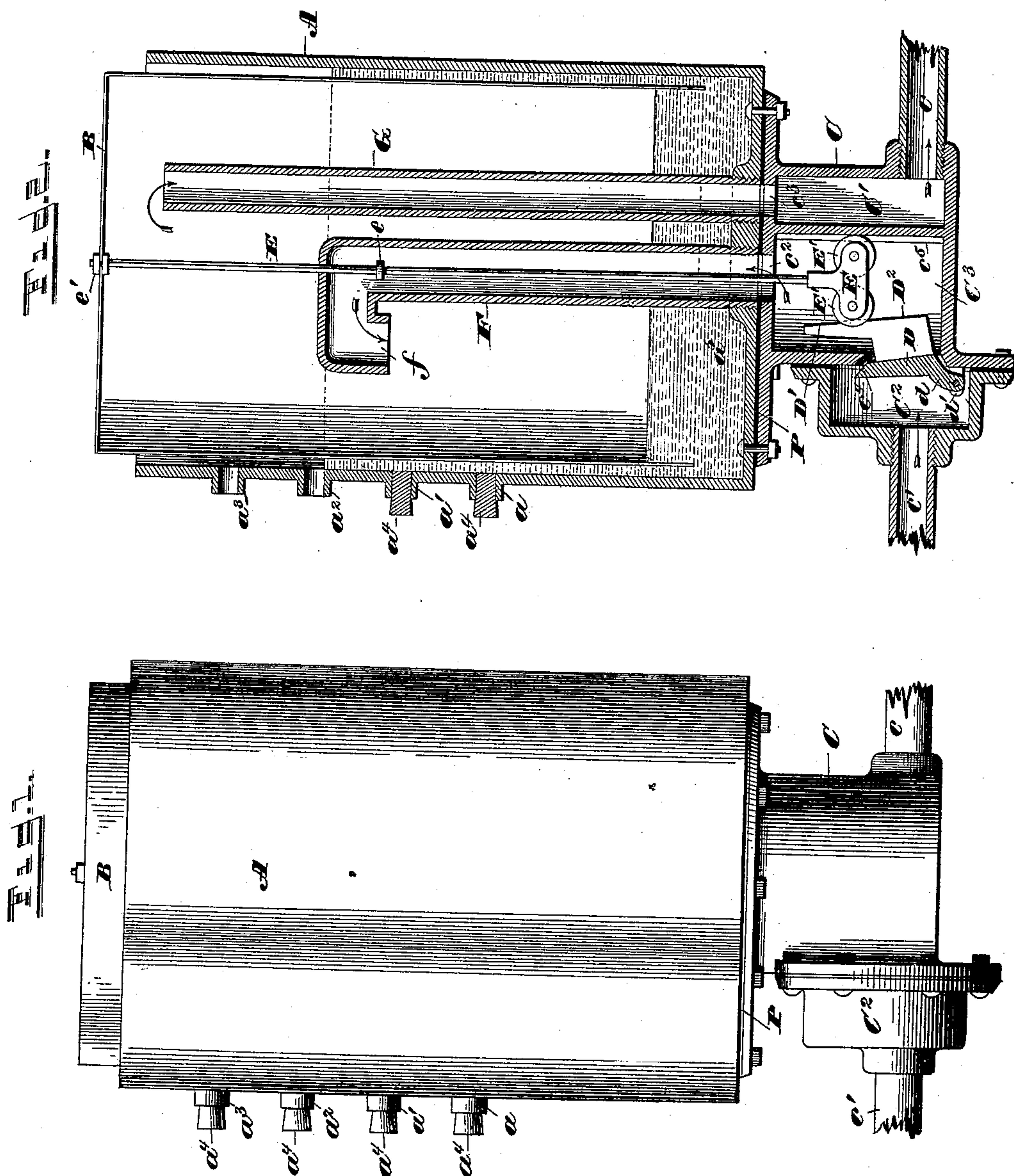


(No Model.)

J. BARROW.
PRESSURE REGULATOR.

No. 397,063.

Patented Jan. 29, 1889.



Jacob Barrow.

INVENTOR.

by

~~Attorney.~~

WITNESSES

WITNESSES
G. S. Elliott.
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UNITED STATES PATENT OFFICE.

JACOB BARROW, OF WINDFALL, INDIANA, ASSIGNOR OF ONE-HALF TO
JOHN D. BAKER, OF SAME PLACE.

PRESSURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 397,063, dated January 29, 1889.

Application filed November 1, 1888. Serial No. 289,735. (No model.)

To all whom it may concern:

Be it known that I, JACOB BARROW, a citizen of the United States of America, residing at Windfall, in the county of Tipton and State of Indiana, have invented certain new and useful Improvements in Pressure-Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to a combined water and gas separator and pressure-regulator; and it consists in the novel construction and combination of parts, as will be more fully hereinafter described and claimed.

The object of my invention is to provide an apparatus of the character above set forth, of simple and effective construction, positive in operation, and strong and durable. I attain this object by the preferred form of construction illustrated in the accompanying drawings, wherein like letters of reference are used to designate similar parts in both views, and in which—

Figure 1 is a side elevation of my improvement. Fig. 2 is a transverse vertical section thereof.

A and B respectively represent the outer and inner chambers, constructed in the form of metallic cans or cylinders. The chamber A is formed with a series of outflow vents or apertures, a , a' , a^2 , and a^3 , arranged at different elevations and adapted to have removable stoppers a^4 inserted therein. The bottom of said chamber is also formed with a raised or thickened integral collar, a^5 , having screw-threaded apertures therein, which receive an inflow-pipe, F, having an elbow, f , for the ingress of the gas and water, and an outflow-pipe, G, for the egress of the gas after separation from the water. The chamber B is constructed with a closed and an open end, the said open end being inserted downward within the chamber A, as shown. The pipe G extends upward into the chamber B a greater distance than the elbowed pipe F, in order

that the pressure may be more effectively regulated.

To the under side or lower end of the chamber A a smaller chamber, C, is attached by bolts, and between said chambers a packing, P, is inserted. The chamber C is divided into two compartments—the water and gas or valve chamber C^3 and the outlet or free gas chamber C' . The upper part of chamber C^3 is formed with a circular opening, c^2 , of equal diameter to and aligning with the bottom of pipe F and an opening in the packing P. The upper part of the chamber C' is formed with a similar opening, c^3 , aligning with the bottom of pipe G, and also has an outflow-pipe, c , connected to the lower part of the outer wall thereof. By means of these openings communication is had between the chamber C and the chambers A and B through pipes F and G. The partition-wall between the chambers C' and C^3 has a flange or guide-track, c^5 , extending into the chamber C^3 . The opposite or outer wall of the said chamber C^3 has a valve-opening, c^4 , in the lower part thereof adapted to be opened or closed by a gate-valve, D. The gate-valve D has a depending projection, d , pivotally held between ears d' , formed with the outer wall of chamber C^3 , and is free to move at its upper end. The central internal face of said gate-valve has an inwardly-projecting enlargement or extension, D^2 , with an upwardly-projecting arm, D' , of less width than said enlargement and in such position as to allow the gate free movement. The inner edge of said arm D' merges into the inner edge of the projection D^2 , and between the said continuous edge and flange c^5 grooved anti-friction rollers E' are mounted and bear upon said parts, as shown. The said rollers E' are mounted in a frame, E, to the upper end of which a long rod, E^2 , is attached and projects vertically upward through the center of pipe F, and, passing through an aperture in the top wall of the elbow f of said pipe, is secured at its upper end to the top closed end of chamber B by means of nuts e' . Upon said rod a collar, e , is immovably mounted, adapted to limit the upward movement of the chamber B and also of the frame E. This collar e abuts against the top wall of the el-

bow f of the pipe F in its upward movement, and is arranged at such a distance from its point of limitation as to always keep the rollers E' in frame E in engagement with the flange c^5 and the merged edge of the extension D^2 and its arm D' of the gate-valve D .

Over the gate-valve D an inflow-chamber, C^2 , is bolted to the side of the chamber C , and has a tapped opening, in which is secured an inlet-pipe, c' .

The gas and water flow in through pipe c' into chamber C^2 , and through opening c^4 , past gate-valve D , into chamber C^3 , and thence up through pipe F , down through chamber B , into chamber A . The gas rises and escapes through pipe G into chamber C' , and out through pipe c . The water is forced by the pressure of the gas under the edge of the inside chamber, B , and by said pressure is raised in the water-chamber A up to the overflow vent or aperture a , and is there discharged. When the water is forced out through overflow a , the pressure will be one ounce in the inner chamber and at the said outlet, regardless of what it may be at the inlet, and the said pressure may be increased to two ounces by removing the stopper from overflow a' down to overflow a , and placing the proper amount of weight on the inner chamber, B . It is evident that it will require more pressure to raise the water to overflow a' , and the extra weight will force the inner chamber down, which will cause the rollers operating on the tracks or ways, hereinbefore set forth, to open the hinged gate or valve D and admit more gas. The pressure may be continuously increased by removing the stoppers of overflows a^2 and a^3 until it reaches four ounces.

It will be seen that gate D and its operating device are arranged on the inside of and attached to the inner chamber to overcome the need of additional valves and thereby prevent friction and outside leakage through stuffing-boxes.

It may be required in some instances to arrange the apparatus by the side of the gas-inflow pipe, and in that event it would be necessary to have the rod E^2 pass down on the outside of the outer chamber, A , to make connection with the gate or valve.

Having thus described my invention, what I claim as new is—

1. In a water and gas separator and pressure-regulator, the combination of the outer chamber having inlet and outlet pipes and overflow-vents therein, an open-ended chamber mounted therein, a compartment-cham-

ber secured to the bottom of said outer chamber and communicating therewith, having a gate-valve in one compartment thereof, and a rod secured to the top of the inner chamber, having a frame on its lower end carrying rollers bearing against the said gate-valve and one side of the dividing-wall of the compartment-chamber, substantially as described.

2. In a water and gas separator and pressure-regulator, the combination of the outer chamber having inlet and outlet pipes and overflow-vents, an open-ended chamber mounted therein, a compartment-chamber secured to the bottom of said outer chamber and communicating therewith, having a flange on its dividing-wall, and inlet and outlet openings and connections, a gate-valve hinged at its lower end to the outside wall of said chamber, having an inwardly-projecting enlargement with an upwardly-projecting arm whose inner edge merges into the edge of the said enlargement, and a rod passing centrally through the inlet-pipe of the outer chamber, being secured at its upper end to the top closed end of the inner chamber and provided with a limiting-collar, and having a frame attached to its lower end carrying grooved rollers adapted to engage the flange of the dividing-wall in the compartment-chamber and the edge of the inner projection of the valve-gate and its arm, whereby the said gate and inner chamber are made regulable, substantially as described.

3. In a water and gas separator and pressure-regulator, the combination, with an outer chamber, with its inlet and outlet pipes and overflow-vents adapted to have stoppers removably placed therein, a chamber mounted therein with its open end down, a compartment-chamber secured to the bottom of said outer chamber and communicating therewith, having a hinged gate-valve therein and an outflow-pipe directly connected to one of its chambers, a rod connected at its upper end to the top of the inner chamber, and having friction-rollers on the lower end engaging with one wall of the compartment-chamber and with the gate-valve, and the inflow-chamber secured to the side of the compartment-chamber over the valve-opening thereof, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB BARROW.

Witnesses:

W. H. DEAN,
W. O. DEAN.