R. K. HUNTOON.

Gas-Exhaust Regulator

No. 207,421. Patented Aug. 27, 1878.

Fig. 1.

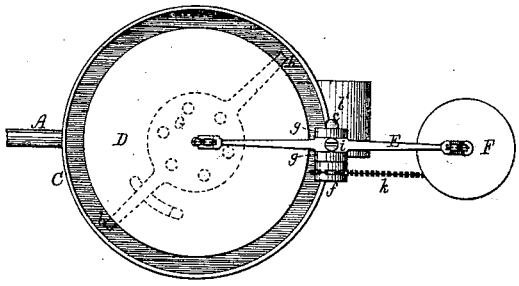


Fig. 4.

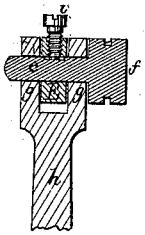


Fig. 2.

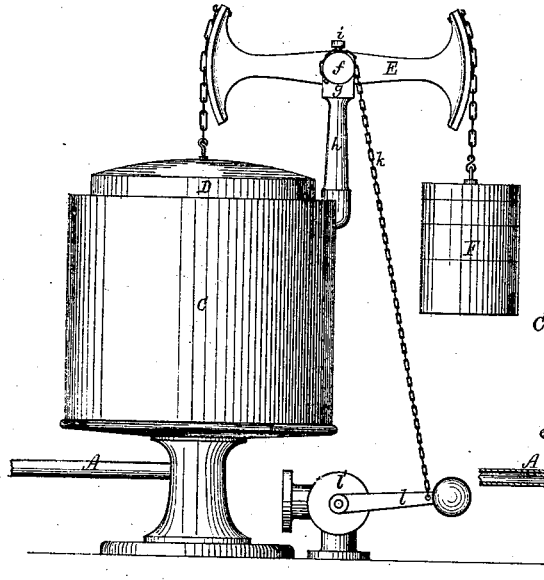
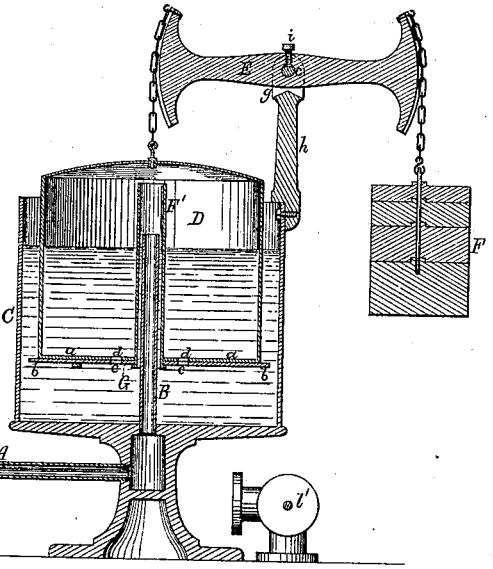


Fig. 3.



Witnesses.
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L. M. Miller

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by his attorney.
R. K. Eddy

UNITED STATES PATENT OFFICE.

REUBEN K. HUNTOON, OF WAKEFIELD, ASSIGNOR TO ALLEN GOVERNOR COMPANY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN GAS-EXHAUST REGULATORS.

Specification forming part of Letters Patent No. **207,421**, dated August 27, 1878; application filed January 26, 1878.

To all whom it may concern:

Be it known that I, REUBEN K. HUNTOON, of Wakefield, of the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Gas-Exhaust Regulators, or apparatus for regulating the supply of steam to a steam-engine when used in operating machinery for extracting gas from one or more retorts employed in the production of such gas; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a front elevation, and Fig. 3 a longitudinal section, of my improved gas-exhaust regulator. Fig. 4 is a section of its balance-lever and its adjustable pulley and fulcrum, to be hereinafter described.

In gas-exhaust regulators provided with a tank and an inverted and counterbalanced bell to work therein, it has been found that, owing to the mouth of the bell being entirely open, the bell, under sudden variations in the pressure of the gas, is liable to move too far in the liquid, thereby causing the engine to operate irregularly. The object of my invention is to obviate this difficulty; and to accomplish such I close the bell at its mouth, except in having one or more openings in the closure, and to such I apply a valve or gate, to close such opening or openings more or less, as occasion may require.

In the drawings, A denotes a conduit leading from a gas-exhaust pipe of one or more retorts. This pipe communicates with a pipe, B, which extends upward within the tank C, provided with a gasometer-bell, D. The said bell is suspended from a duplex sectoral lever, E, having a counterbalance-weight or series, F, of weights appended to it.

The bell is closed at its lower end by a head, *a*, from which there extends upward a tube, F′, which, arranged concentrically with the tube B, surrounds it, is open at each end, extends through the bottom *a*, and serves as a journal for a rotary gate, G, to turn on. This gate, provided with one or more arms, *b b*, projecting from it, as shown, has one or more apertures, *c*, arranged in it, as represented, to co-operate with a like number of such apertures, *d*, made in or through the bottom *a* of the bell. By means of the gate the apertures *d* may be closed more or less.

The fulcrum *e* of the counterbalance-lever E has fixed upon it a grooved pulley or wheel, *f*, such fulcrum being a pin to turn freely in the lever, and also in the supporting-bearings *g g* at the head of the post *h*, that projects upward from the tank. A clamp-screw, *i*, is screwed into the lever and against the pin. To the periphery of the wheel *f* one end of a chain, *k*, is attached, the other end of such chain being fixed to the arm *l* of the throttle-valve of the supply-pipe of the steam-engine, the valve-case being shown at *l′*.

By having the wheel *f* fixed to the pin or fulcrum *e*, and the latter rotary in its bearings and lever, and capable of being fixed to the lever by the clamp-screw, we have a means of adjusting the tank to the valve as occasion may require.

From the above it will be seen that when the tank and bell are duly supplied with water, and the gas may increase in volume or pressure in the exhaust-main, the bell will be forced upward in the tank, and consequently the throttle-valve will be moved so as to increase the flowage of steam to the cylinder of the engine, and thereby cause the engine to work faster, opposite results taking place as the gas may diminish in the bell. As the bell may rise, water within it will be discharged through the bottom opening or openings. Such water, while remaining in the bell, will retard its rise, and cause such to gradually take place and not suddenly, as would be the case were the bell entirely open at bottom. The degree of escape of the water can be regulated by means of the gate, which can be turned more or less by a rod inserted into the tank and pushed against one of the arms of the gate.

It will be evident that a tank having a perforated bottom, without a gate applied thereto, would operate with good effect; but with the gate further advantage is gained, as will be readily understood. The action of the water is such as to prevent the tank from rising too rapidly or too far, or, when going down,

from falling too rapidly or too far, such causing the engine to be properly regulated in speed, as occasion may require, for the extraction of the gas from the retorts.

I claim as my invention as follows—that is to say:

1. In a gas-exhaust regulator, the tank-bell, provided with a perforated bottom, and a valve or gate thereto, substantially as set forth.

2. In a gas-exhaust regulator, the combination of the tank C and the induct-pipe B therein with the bell D, its pipe F′, and perforated bottom *a*, all being substantially as specified.

3. The combination of the gate G and its arm or arms *b* with the bell D and its pipe E and perforated bottom *a*, all being arranged and applied essentially as set forth.

4. In combination with the throttle-valve arm *l*, chain *k*, and pulley *f*, and with the counterbalance-lever E, the bell D, and tank C, the set-screw *i* and the rotary fulcrum *c*, or equivalent means, for adjusting and fixing the pulley with reference to the lever, as set forth.

REUBEN K. HUNTOON.

Witnesses:
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