L. G. McCAULEY.

Gas-Regulator for Retorts.

No. 207,052. Patented Aug. 13, 1878.

Fig. 1.

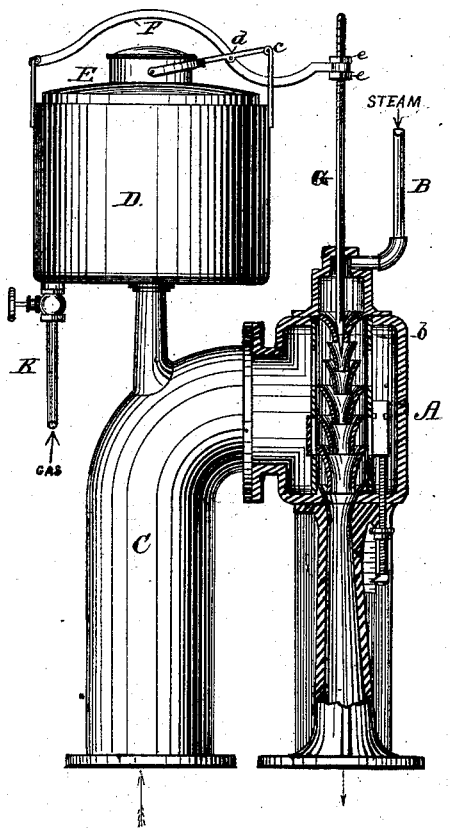
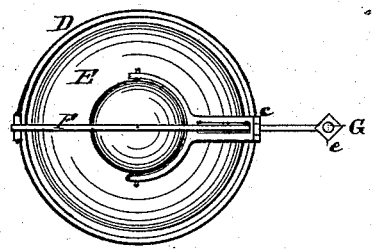


Fig. 2.



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LEVI G. McCAULEY, OF WEST CHESTER, PENNSYLVANIA.

IMPROVEMENT IN GAS-REGULATORS FOR RETORTS.

Specification forming part of Letters Patent No. **207,052**, dated August 13, 1878; application filed July 15, 1878.

To all whom it may concern:

Be it known that I, LEVI G. McCAULEY, of West Chester, in the county of Chester and State of Pennsylvania, have invented a new and Improved Gas-Regulator for Retorts; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an apparatus for relieving the pressure of gas in retorts of gas-works by allowing it more rapid escape into the hydraulic main when the pressure is too great. The apparatus is connected and co-operates with a steam-jet exhauster, which is used for exhausting retorts and forcing the gas into the hydraulic main.

In the accompanying drawing, forming part of this specification, Figure 1 is a partly-sectional elevation, showing my regulator applied to an exhauster. Fig. 2 is a plan view of the regulator proper.

The steam-jet exhauster A is of the type or pattern illustrated in patent of E. Körting, No. 142,856, and is constructed on the principle of the well-known Giffard injector.

B is the steam-induction pipe, and C the pipe leading to gas-retorts. (Not shown.)

The gas-pressure regulator consists of the following parts, to wit: a water-holder, D; a concentric gas-holder, E, contained therein, a lever, F, which is fulcrumed at one end on a fixed support, *a*, attached to the water-holder D, and adjustably connected at its free end with a vertical spindle or rod, G, which is extended downward and tapered to form the valve of the steam-exhauster A; and a short lever, I, which is also fulcrumed on a fixed support, *c*, and pivoted at its opposite or free end to the top of the gas-holder E, and at an intermediate point, *d*, to the long lever F. The latter is arched to allow for upward movement of the gas-holder E, and passes through elongated slots in the short lever I and its fulcrum *c*.

The spindle G is screw-threaded, and the adjustable connection between it and the lever F is formed by screw-nuts, *e e*, placed one above and the other below the eye formed on the end of the lever.

The regulator, as a whole, is supported upon the retort-pipe C.

The operation of the apparatus is as follows: The tank or cylinder D being filled with water to a suitable height, and the gas from the retorts allowed to pass into the holder E through pipe K, its pressure therein will raise the holder more or less.

It is obvious that since any rise or fall of the holder E will raise or lower the bifurcated inner end of the short lever I correspondingly, the free end of the long lever F must also have a like movement, in consequence of the hinge-connection *d* between the two levers; and since such vertical movement of the free end of lever F either raises or depresses the spindle G, it is further apparent that the valve H will be thereby partly or entirely opened or closed, according to the extent of variation in the height of the gas-holder D under the varying pressure of gas in the retorts. When the pressure is above a certain degree the spindle G is raised and valve H opened to allow the steam-jet to exhaust the retorts more rapidly, and thus relieve the pressure. On the other hand, when the pressure falls below a certain degree, the spindle B is depressed and the valve *b* closed to shut off the steam-jet.

The desired degree of pressure in the retorts is thus dependent on the action of the steam-jet exhaust as governed by the action of the regulator; and the latter may be caused to relieve the pressure at different degrees by adjusting the nuts *e e* up or down on the spindle G, thus practically varying the weight of the holder E, which the pressure must suffice to overcome in order to open the steam-jet valve *b*. The connection between the latter and the spindle may be effected in various ways.

The regulator may be applied to various forms of fluid-injectors or exhaust apparatus besides that used in connection with gas-retorts.

What I claim is—

The combination, with the steam-jet apparatus and the gas-holder E, of the spindle G and valve *b*, and lever F, the latter having a flexible or hinge connection with said gas-holder, as specified.

LEVI GHEEN McCAULEY.

Witnesses:
WM. B. McDERMOND,
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