



XXVI. A simple and accurate mode of constructing gasometers for purposes where uniform pressure is essential, by the application of the hydrostatic regulator

Joseph Steevens Esq.

To cite this article: Joseph Steevens Esq. (1806) XXVI. A simple and accurate mode of constructing gasometers for purposes where uniform pressure is essential, by the application of the hydrostatic regulator , Philosophical Magazine Series 1, 24:94, 163-164, DOI: [10.1080/14786440608563352](https://doi.org/10.1080/14786440608563352)

To link to this article: <http://dx.doi.org/10.1080/14786440608563352>



Published online: 18 May 2009.



Submit your article to this journal [↗](#)



Article views: 2



View related articles [↗](#)

XXVI. *A simple and accurate Mode of constructing Gasometers for Purposes where uniform Pressure is essential, by the Application of the Hydrostatic Regulator. By JOSEPH STEEVENS, Esq.*

To Mr. Tilloch.

SIR,

I HAVE herewith sent you a drawing and description of a gasometer constructed on the principle of my hydrostatic regulator, described in your twentieth volume, page 289, which, I conceive, will be found fully as useful as the most complex and expensive instrument of this kind that has yet been produced. I have endeavoured to be brief in my description, as the reader will easily comprehend the uses and modes of employing the instrument from the descriptions you have already published of other gasometers, and of the hydrostatic regulator already referred to.—I am, sir,

Your obedient servant,

Garlic Hill,
March 8, 1806.

JOSEPH STEEVENS.

A tin vessel, A, (Plate V.) of 12 inches diameter and 12 inches deep, is supported by four pillars *p, p, p, p* fixed at the top into the circular piece of wood *m, m*, and at the bottom into the wood base *q q* about an inch and a half thick, and hollowed out in the middle to receive the convex surface of the vessel B, on which it is fixed by means of the loops and hooks *o, o, o, o*: through the base *q q* two holes are made to allow the cocks *g c* to pass, for readily removing B for the purpose of filling, &c., though by having a cock near the bottom it may be filled in its present situation. The vessel B is about 13 inches diameter and 10 deep. *d* is a collar of leathers fixed to the vessel A, through which a metal tube *d e* passes, extending down the tube *f g* to *e*. To the cock *g* a recurved tube is fixed, and so bent that it returns and nearly touches the upper part of the gas-holder B. A slip of metal may be placed diagonally under this tube, to prevent the noise of the water while running from A to B. The vessel A being filled with water, and B with gas, in the

L 2

usual

usual manner, (for B is no more than the common gas-holder,) screw in the collar d , shut the cock c , and open g , the water will run in until the density of the gas in B is capable of resisting its effective pressure, which will always be exactly equal to a column of water whose height is equal to the height of the orifice e , of the tube de , above that of the recurved tube in the vessel B: for as the air in entering the vessel A has to counteract a column of water equal to the depth e below the surface, so will the gas in B be pressed with the whole column, minus that part of it above e ; for the superincumbent column above e has no share in the pressure, which may be increased and decreased at pleasure by elevating and depressing e , without regard to the quantity of water in A, and which pressure will continue uniform until the water subsides to the level of the orifice e .—See the description of my hydrostatic regulator, *Phil. Mag.* vol. xx. p. 289.

From the facility with which the pressure in this gasometer may be altered, it becomes a very useful instrument in all cases where the blowpipe is used; whether when charged with oxygen gas for the purpose of deflagrating or of deoxidating metals, the combustion of the diamond, or other experiments where intense heat is required; or whether it is charged with atmospheric air for miniature, glass-blowing, soldering, or the like. It will also be found useful for filling vessels for a variety of experiments in pneumatic chemistry, as well as for playing jets of flame, &c. If a cock, provided with a jet capable of being inclined in any angle to the horizon, be fixed into the tube fg near g , and the tube de so elevated that the orifice e arrives near or within the bottom of the vessel A, a useful and accurate apparatus will be formed for illustrating the parabolic theory of projectiles; for, as the pressure and efflux is uniform, the horizontal ranges will be equal at equal angles above and below 45° , and the curve described distinct and well defined. An instrument of this kind has been employed in the Mathematical Society's present course of lectures, and is now in their repository.