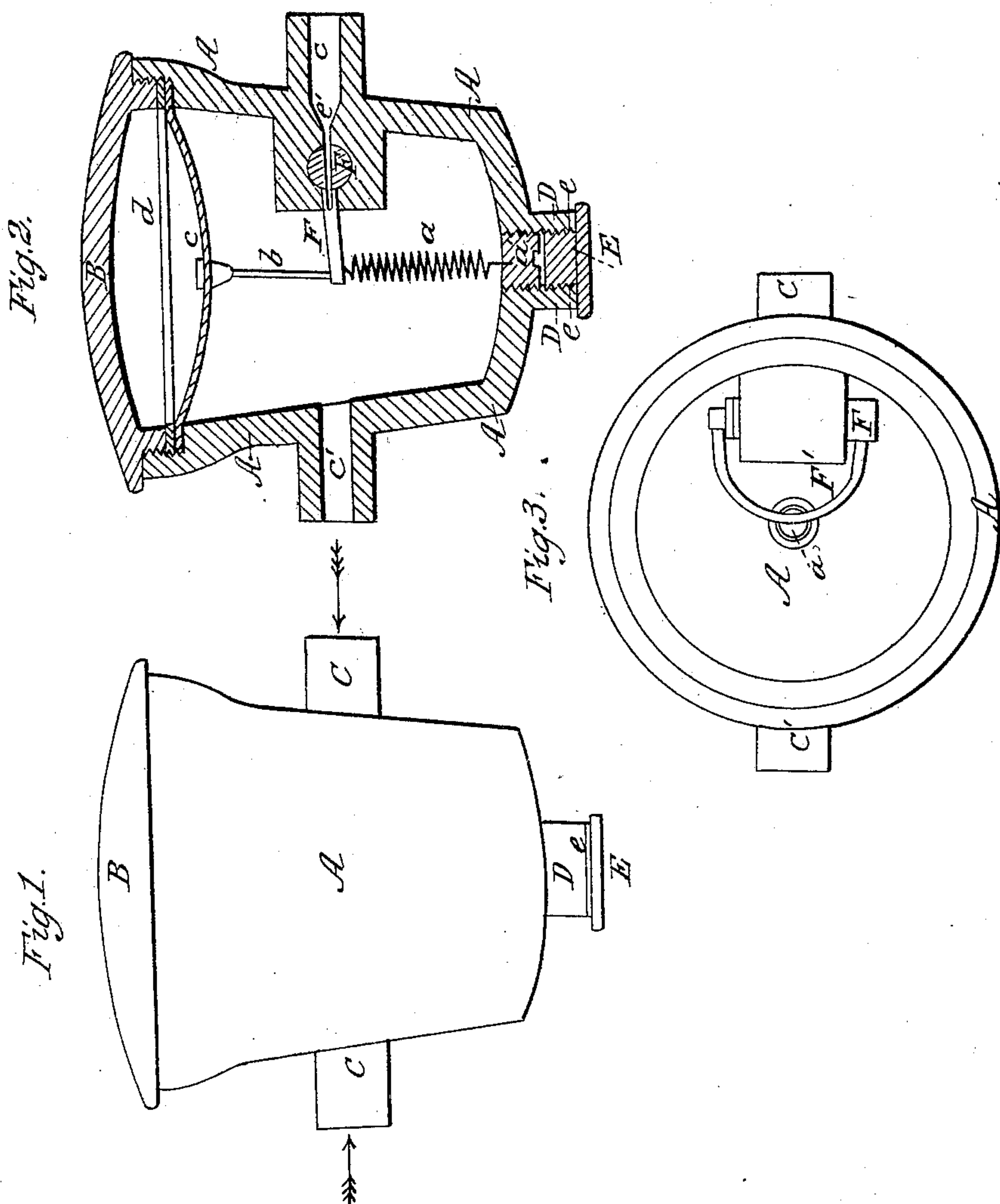


Gas Regulator.

Patented Sept. 21, 1858.



UNITED STATES PATENT OFFICE.

S. BIDWELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO NEW YORK CAR AND STEAM BOAT GAS COMPANY, OF NEW YORK, N. Y.

GAS-REGULATOR.

Specification forming part of Letters Patent No. 21,544, dated September 21, 1858; Reissued July 31, 1860, No. 1,018.

To all whom it may concern:

Be it known that I, SALMON BIDWELL, of the city of Chicago, county of Cook, and State of Illinois, have invented a new and Improved Gas-Regulator for Portable Compressed Gas; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to letters of reference marked thereon.

The nature of my invention consists in the mode of operating the cock by the spring and diaphragm, by the pressure of the gas, in the regulator as constructed.

Figure 1, is an exterior side elevation. Fig. 2, is a vertical section. Fig. 3, plan view, with top, and diaphragm removed.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

In the construction of my invention in Fig. 1, A the cylinder; B the top of cylinder; C the inlet for admitting the gas to the cylinder through the cock; C' the outlet; D, the pipe through which is inverted the spiral spring and which is regulated by a screw; E, the screw passing into pipe D, with rubber washer *e*, to make it gas tight.

In Fig. 2, A the cylinder; B the top of cylinder attached to cylinder A and which holds the diaphragm in its place; C the inlet; C' the outlet; D the lower pipe into which is let a screw *a'* to which is attached the spiral spring *a*; E the screw on the lower end of the pipe which screws into the same and on which is a rubber washer *e* to make the joint gas tight; *b*, the rod attached to the elastic diaphragm and cock handle; *c*, the diaphragm; *d*, the washer; *e'*, passage-way through the inlet pipe and cock for the flow of gas into the cylinder; F, the cock; F' the handle to operate the cock and to which is attached the rod *b*, and spiral spring *a*; *a'* the screw.

In Fig. 3, A the cylinder; C the inlet pipe; F the cock; F' the handle for operating the cock; *a*, the spring; C' the outlet pipe.

In operating my invention it will be seen that what I wish to accomplish is a regular flow of gas from a portable cylinder which may be filled at any gas depot, or from the street pipes, and used on steamboats, railroad cars, or in houses, as may be desired;

and to accomplish this, it is necessary that the gas before it enters the burner must be regulated, so that the flow will be according to the pressure. This I accomplish by the means of the construction described. In the inlet pipe C, I insert the cock F horizontal to the pipe, and through which cock is hole *e'*, as seen in Fig. 2, handle F' is attached to the cock and projects forward from the pipe, C, and can operate the cock by being lifted up or pressed down. To this handle is attached rod *b*, and spring *a*. *b* the rod, extends up to the diaphragm, and the spring *a*, extends down to the screw *a'* to which it is attached, and which screw is capable of being screwed up or down, by this means tightening, or loosening the spring *a*, so as to govern thereby the pressure of the gas to the burner.

The diaphragm *c*, is so constructed as to descend below a straight line as seen at Fig. 2, and when the cylinder is full and the gas compressed the diaphragm is pushed above the straight line, thus turning the cock off.

The gas is forced into a portable cylinder by means of a force pump to any degree of pressure required, it is then closed and conveyed to the place where I desire to use the gas, where it is attached to the inlet pipe C in the ordinary way, and then passes into the cylinder or regulator A, through the aperture *e*, until the regulator is filled to a pressure sufficient to raise the diaphragm *c*, and thereby cut off the flow of gas to the regulator. As soon as I commence to burn the gas at the burner, the consumption of the gas in the regulator causes the diaphragm to descend by means of the spring *a*, which carries down the handle F', which opens the cock F, and allows the gas to flow into the cylinder, or regulator, equal to the amount consumed, thus keeping up an equal flow to the burner, without regard to the pressure, or in other words the flow is equal at all times at the burner, whatever may be the amount of pressure from the compressed gas in the movable cylinder, as it will be always regulated by the diaphragm *c* and spiral spring *a*, alternately closing, and opening the cock, thus graduating the flow to the burner, making it always equal.

Having thus described the nature of my invention I do not claim such an apparatus

as the patent of H. F. Beacon Newton's con-
joined series, volume 14, page 89, plate 5,
as this invention is not suitable for my pur-
pose, it being entirely inoperative from its
5 construction in regulating the flow of gas
under varying pressure; but

What I do claim and desire to secure by
Letters Patent is:

The cock F, operated by the diaphragm *c*,
rod *b*, and spring *d*, as described, and set 10
forth.

SALMON BIDWELL.

Witnesses:

WM. DIXEY,

I. A. G. WOODSIDE.

[FIRST PRINTED 1911.]