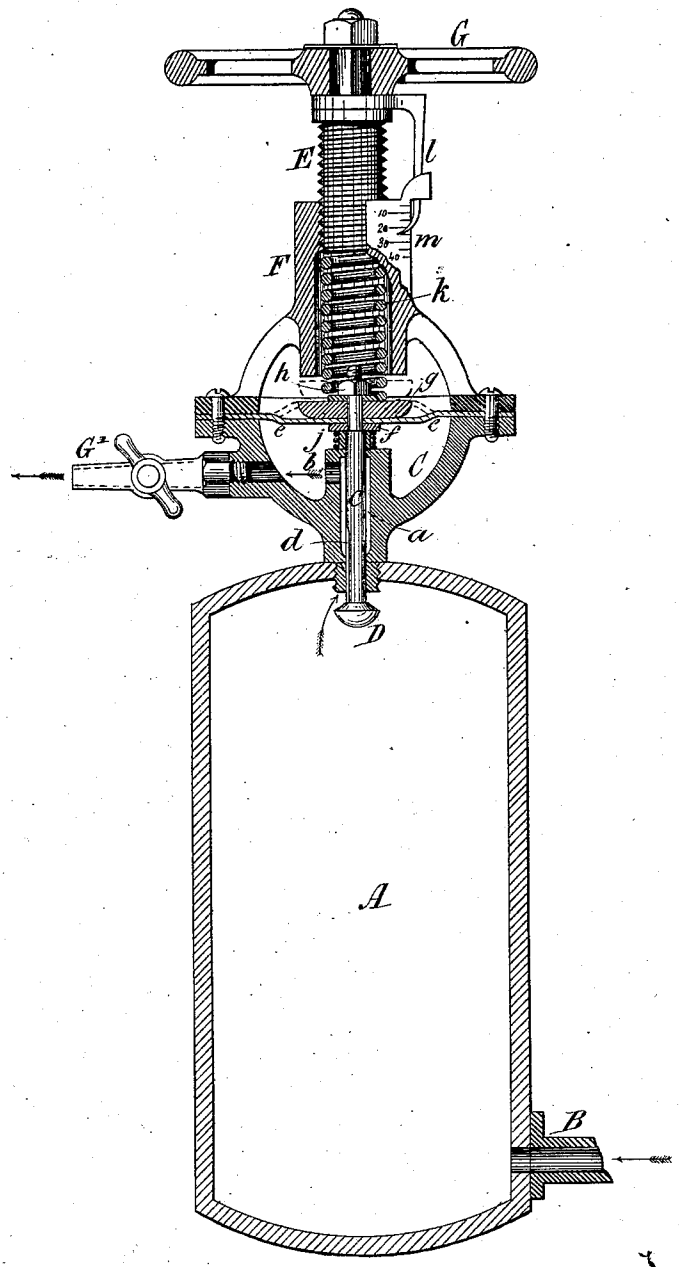
(No Model.)

E. SALOMON.

PRESSURE REGULATOR.

No. 255,338. Patented Mar. 21, 1882.



Witnesses:

Owen N. Evans

Eugene Quirk

Inventor.

Etienne Salomon

Per Atty. Charles Robb

UNITED STATES PATENT OFFICE.

ETIENNE SALOMON, OF MONTREAL, QUEBEC, CANADA.

PRESSURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 255,338, dated March 21, 1882.

Application filed April 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, ETIENNE SALOMON, of the city and District of Montreal, in the Province of Quebec and Dominion of Canada, machinist, have invented a certain new and useful Improvement in Apparatus for Regulating the Discharge of Air, Gas, or other Fluids under Pressure; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings.

My invention relates to an improvement upon the patent applied for by me, filed October 11, 1880, and allowed March 23, 1881, but not yet issued, for a similar invention, in which provision is made for a more extensive distribution and a more delicate adjustment of the pressure than may be necessary in many circumstances.

The chief object of my present improvement, while it does not differ substantially from the former, is to simplify and cheapen the apparatus by using only one regulating-spring and one vent-pipe for the dischage of air or gas, and by dispensing with the self-regulating cock or tap between the reservoir and regulator.

The nature of my present invention and improvement consists in the combination of a reservoir for compressed air or other gas or fluid, a regulating-chamber with air-tight elastic diaphragm and attached valve, adapted to open or close the communication between the reservoir and regulating-chamber, and an adjustable spring acting upon the valve in opposition to the pressure of the reservoir, by the joint operation of which any required pressure may be obtained and transmitted with the utmost accuracy and facility.

The annexed drawing shows a diametrical section of my improved pressure-regulator, and will suffice to exhibit all its peculiar features. The vessel A is designed to contain air or other gas or fluid, and may be made of any desired size or shape and suitable material. I prefer to construct it of a cylindrical form, with dome-shaped top and bottom, for greater strength. This vessel, when the apparatus is required for operation, must be constantly supplied through a pipe, B, with air or other elastic fluid at a pressure sufficiently high for all purposes required.

C designates the regulating-chamber, made of any suitable shape or material, and secured air-tight to the vessel or reservoir A, with which it communicates by a passage, *a*, bored out truly cylindrical, in suitable projections cast both on the exterior and interior of the regulating-chamber C, and having a lateral port or opening, *b*, into the latter. The inner end of the passage *a*, where it connects with the reservoir A, is formed and truly bored for the reception of a conical valve, D, opening inwardly, and having its stem *c* adapted to slide air-tight in the passage *a*, but with a longitudinal groove or recess, *d*, formed in it immediately above the valve-face, so as to establish a connection between the interior of the reservoir A and the regulating-chamber C, said connection being more or less free according as the valve D is more or less opened. The opposite end of the regulating-chamber is closed and hermetically sealed by an elastic air-tight disk, diaphragm, or washer of india-rubber or other suitable material, *e*, capable of sustaining the requisite pressure, and at the same time of moving backward or forward in obedience to the forces which may be brought to act upon it. The elastic diaphragm *e* is confined toward its center between two metallic plates or washers, *f* and *g*, the former of which is fitted to bear upon a shoulder on the outer end of the valve-stem *c*, and the latter (which is much larger and nearly of the diameter of the regulating-chamber itself) is retained in place by a nut, *h*, screwed to the prolongation of the outer end of the valve-stem. The washer *f* is pressed upwardly by a spring, *j*, with merely sufficient force to retain the valve D in place against its seat when there is no pressure from within the reservoir A, until adjusted from above, while the washer *g* is pressed downward, or in the opposite direction, by the spring *k*, so arranged as to counteract by a simple but delicately-adjustable apparatus the pressure within the reservoir A upon the valve D. This mechanism consists of a finely-threaded screw, E, working in a suitable pipe or casing, F, attached to the regulating-chamber C and in-

closing the spring *k*, a hand-wheel or key, G, for operating the regulating-screw E, and an index or pointer, *l*, working on a graduated scale, *m*, on the pipe F, said index being connected with the screw E, so as to show on the graduated scale *m* the exact amount of pressure exerted by the spring *k* upon the valve D, and consequently the degree of pressure at which the air or other elastic fluid within the reservoir A is allowed to escape through the distributing-pipe G. By these arrangements it will be seen that, accordingly as the pressure upon the spring *k* is regulated by the screw E and index *l*, the valve D will open or close more or less in obedience to the varying pressure within the reservoir A, and as this motion is immediately communicated to the regulating-chamber C the air-tight elastic diaphragm *e* will rise or fall, thereby imparting the requisite motion for opening or closing the valve D, and thus transmitting the pressure at any predetermined degree through the pipe G.

I do not restrict myself to the precise details herein described, and shown in the drawings, so long as the peculiar character of any part of my invention is retained. Thus, instead of regulating the pressure by the spring *k*, screw E, index *l*, and scale *m*, I may use an adjustable weighted lever for the same purposes.

I do not claim in this application any of the features shown in the patent of J. M. Foster, No. 238,375, dated March 1, 1881; neither do I wish to include any part of my former invention for which Letters Patent No. 240,549 were granted to me April 26, 1881; but,

Having thus fully described the nature of my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, viz:

In a pressure-regulator, the combination of the vessel A, regulating-chamber C, securely attached thereto, said regulating-chamber being provided with diaphragm *e*, capable of yielding to an upward-and-downward pressure, the valve-stem *c*, one end of which is secured to the diaphragm and the other to a valve, D, within the vessel A, said stem having a groove or port, *d*, in its side, through which the fluids pass, and ports *a* and *b*, with the regulating mechanism, all arranged fo operation in the manner set forth and described.

ETIENNE SALOMON.

Witnesses:
GEO. R. W. KITTSON,
WILLIAM F. BROWN.