

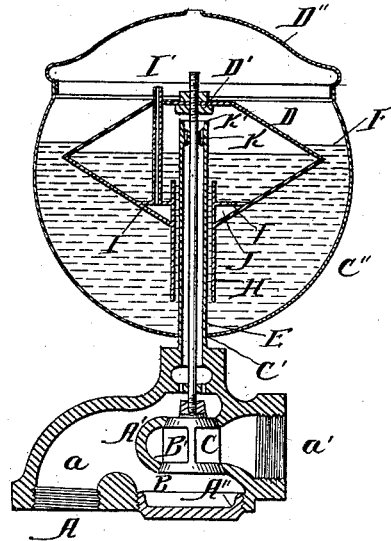
(No Model.)

E. A. SPERRY.  
GAS PRESSURE REGULATOR.

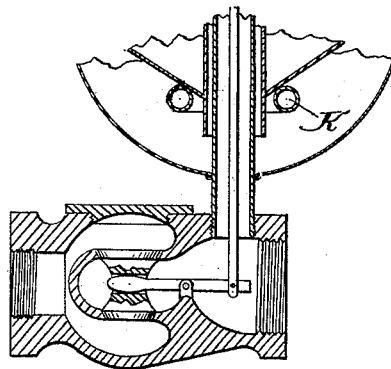
No. 418,245.

Patented Dec. 31, 1889.

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

*Celeste P. Chapman.*

*David J. Johnson.*

*Inventor:*

*Edwin A. Sperry.*

*Frederic W. Parker*

# UNITED STATES PATENT OFFICE.

ELMER A. SPERRY, OF CHICAGO, ILLINOIS.

## GAS-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 418,245, dated December 31, 1889.

Application filed September 9, 1889. Serial No. 323,477. (No model.)

*To all whom it may concern:*

Be it known that I, ELMER A. SPERRY, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Improvement in Gas-Pressure Regulators, of which the following is a full, clear, and exact specification.

My invention relates to mechanism for the regulation of fluid-pressures; and it consists in the details of construction hereinafter specified, and more fully pointed out in the claims.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 represents a sectional view of the regulator. Fig. 2 represents a varied form.

Like letters refer to similar parts throughout the several views.

A is a valve-casing provided with a septum A', which is bored to make valve-seatings B and B', which are fitted to a valve C, provided with a stem C', which projects upward to a float D, of special construction, being adjustably attached thereto by nuts D'. A tube E, secured suitably into the valve-casing A, as shown, serves to support a spherical-shaped reservoir C'' and cap D'', which contains glycerine or light fluid. The level of the fluid is indicated by line F. The float consists of two conical flanges G and G' and a tube H, together with the ring I, leaving the air-space J. The screw-threaded portions A' and A'' serve, respectively, to receive and eject the fluid, the pressure of which is regulated by the apparatus.

In Fig. 2 K represents a small rubber or other ring, hollow and filled with air, which takes the place of the air-cavity J. A small tube I' communicates with the air-cavity J in Fig. 1. The float is rendered adjustable upon the stem C' by the nuts and extended screw-threads thereon.

The operation of the device is as follows: The reservoir C'' is filled with the fluid to such a level that the air-cavity J, together with the fluid or gas pressure upon the float, will bring the valve C in such proximity to the seats B and B' that the pressure of the gases at point a will be all that is required.

Should the pressure decrease at a, the float will drop, opening the valve and enlarging the communication with passage a', in which a higher pressure exists, thereby raising the pressure in passage a, which, communicating with the float, will raise the valve and establish less communication between the two passages. It will readily be seen that the valve has a larger area upon the under side or against seat B. The pressure coming in at a' will exert a greater downward thrust upon the valve B, owing to its increased area downward, than it will upward against the upper disk of the valve C. This extra pressure I neutralize to a certain extent by the air-cavity J, and the size of the air-cavity J should be adjusted somewhat in relation to the weight of the parts, together with the difference of pressure in a' and a. The upwardly-projecting tube E is provided at its extremity with a stop K', which engages the lower nut D'. This tube is also provided below this point with a guide K. I place the guide below the stop, so that the threads upon the rod C' will not move over the surface of the guide and interfere with the smoothness of the device. The cap A'' serves, by its depressed upper face, the function of a cup for containing the residue or condensed portions, especially those coming from the service-pipes connecting with the screw-threads at a. The arrangement is obviously such in Fig. 1 that the fluids are not compelled to pass either of the valve-seats of the valve C.

The tube I', which connects the cavity J to the outer air, I use for the purpose of conducting into the said cavity a solid or fluid, which I use for increasing or adjusting the gravity of the moving parts.

I claim as new and desire to secure by Letters Patent—

1. In a gas-pressure regulator, a valve-stem connecting the valve and float, screw-threads and nuts upon said stem for adjusting the height of the float upon said stem, the tube for containing said stem provided with a stop at the end of said tube, and a guide for the stem at a point below the end of the tube, substantially as and for the purpose specified.

2. The valve-casing provided with valve-

seats, in combination with the upwardly-projecting tube E, containing a guide below the end thereof, and a stop above the guide, and a screw-threaded valve-stem C', movable  
5 within said tube.

3. In a gas-pressure regulator, the combination of the valve C, screw-threaded valve-stem C', tube E, float D, nuts D' D', guide K,

and stop K', all arranged substantially as and for the purpose specified.

Signed this 27th day of August, 1889.

ELMER A. SPERRY.

In presence of—

CELESTE P. CHAPMAN,  
H. B. HALLOCK.