

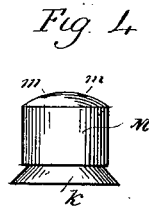
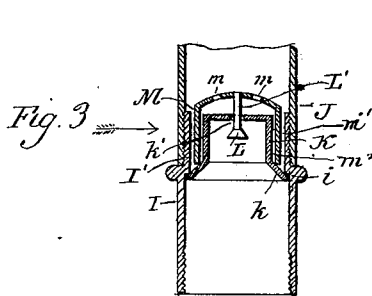
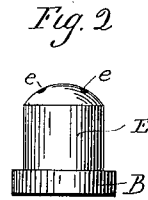
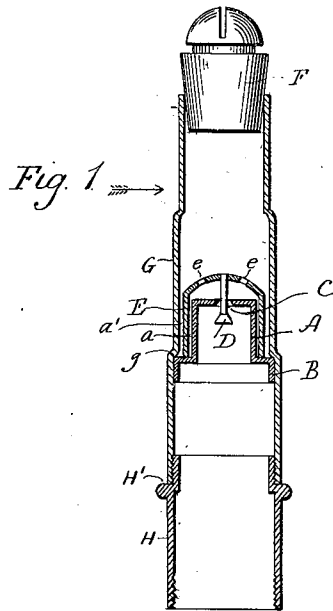
No. 653,535.

Patented July 10, 1900.

N. SLEEMAN.  
GAS REGULATOR.

(Application filed Oct. 24, 1899.)

No Model.)



Witnesses.  
J. N. Shumway  
Lillian D. Kellogg

Nathaniel Sleeman  
Inventor.  
By atty Seymour T. Carey

# UNITED STATES PATENT OFFICE.

NATHANIEL SLEEMAN, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO  
GEORGE S. TERRY, TRUSTEE, OF NEW YORK, N. Y.

## GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 653,535, dated July 10, 1900.

Application filed October 24, 1899. Serial No. 734,631. (No model.)

*To all whom it may concern:*

Be it known that I, NATHANIEL SLEEMAN, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Gas-Regulators; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification and represent, in—

Figure 1, a view in vertical section, showing a gas-burner and one form of my improved gas-regulator; Fig. 2, a detached view of the regulator; Fig. 3, a view of a modification of my improvement as applied to the base of a gas-burner; Fig. 4, a detached view of the said device.

My invention relates to an improvement in automatic regulators for gas-burners, the object being to produce at a low cost for manufacture a simple, reliable, and efficient device constructed with particular reference to the reduction of the number of parts employed to the minimum and to easy application to existing burners, as well as to those initially designed to receive it.

With these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claim.

In carrying out my invention as shown in Figs. 1 and 2 I employ a drawn sheet-metal cup-like regulator-body A, cylindrical in cross-section, formed at its lower end with an annular flange-like locating-shoulder B, larger in diameter than it is, and at its upper end having a flat top containing a centrally-arranged valve-seat C, which constitutes the sole passage-way for the gas. The said valve-seat C is opened and closed by means of a valve D, located within the said cylindrical body A and formed with a long stem extending upwardly through the said valve-seat and attached at its extreme upper end to the dome-like center of a drawn sheet-metal cup-like regulator-float E, cylindrical in cross-section and enough larger in internal diameter than the external diameter of the said body to form an annular passage-way  $a$  for the escape under its lower edge of the gas, which after passing upward through the valve-seat

C is deflected by the dome-like top of the float and caused to flow downward through the said annular passage-way  $a$  and under the lower edge of the float, after which it passes upward through an annular passage-way  $a'$ , formed between the outer face of the float and the contiguous portion of the inner face of the burner-tube G. Although the cylindrical body A and the cylindrical float E and the burner-tube G are sufficiently differentiated in diameter to provide the two annular gas-passages mentioned,  $a$  and  $a'$ , the diameters of the said parts conform closely enough to each other to cause the body A and burner-tube G to guide the float as it rises and falls, whereby it is prevented from being fouled by canting. If desired to increase the flow of gas, small gas-perforations  $e$  may be formed in the dome-like top of the burner-float, as shown; but these are not imperative, as it is designed that the main escape for the gas shall be around the lower edge of the float, as set forth. My improved gas-regulator as thus constructed is forced into the lower end of the said burner-tube G, which is formed with a shoulder  $g$ , against which the annular locating-shoulder B of the body is abutted for the proper location of the regulator, which is held in this position by friction. The upper end of the burner-tube G receives a burner-tip F; while its lower end is formed with internal screw-threads and adapted to receive the externally-threaded upper end of the burner-base H, which is formed with a shoulder H', upon which the lower edge of the burner-tube rests, the said burner-tube G and burner-base H together forming the burner-body.

It may now be explained that the float E is adapted in weight and cubical capacity to be lifted and supported by just that pressure of gas at which it is desired to burn the gas. When that predetermined pressure is exceeded, the float will immediately rise, so as to seat the valve D upon the valve-seat C, whereby the flow of gas into the upper portion of the burner-tube is entirely cut off. Then as the gas within the float E gradually escapes and is consumed the pressure within the float will be lowered below the pressure required to support it in an elevated position, and consequently the float will correspondingly fall,

and the valve D will be lowered below the valve-seat C long enough to permit enough gas to pass upward through the valve-seat into the float to lift the same again and effect the reclosing of the valve-seat, and so on. It will be apparent from the foregoing that through the medium of my improved regulator the gas will be supplied to the burner-tip under a practically-uniform pressure, notwithstanding that there may be great variations in the pressure of the gas below the valve-seat.

My improved gas-regulator, as shown by Figs. 3 and 4 of the drawings, is constructed with particular reference to insertion into the burner-base I rather than into the burner-tube J of a burner. The regulator-body K in this construction is flared at its lower end to produce an annular locating-flange *k*, which is abutted against a shoulder *i*, formed within the upper end of the burner-base I. This flange *k* corresponds to and takes the place of the annular flange-like locating-shoulder B in the construction shown in Figs. 1 and 2. The flat top of the regulator-body K is formed with a centrally-arranged valve-seat *k'*, which is opened and closed by a valve L, having a stem L' extending up through it and fastened to the center of the dome-like upper end of a cylindrical cup-like regulator-float M, intermediate in diameter between the diameters of the body K, and a collar I', formed at the upper end of the burner-base I and externally threaded for the attachment to it of the burner-tube G, the lower end of which is internally threaded for the purpose. Under this construction an annular gas-passage *m'* is formed between the collar I' and the float M and a corresponding annular gas-passage *m*<sup>2</sup> between the float and the regulator-body. In this construction also the burner-tube, float, and regulator-body are sufficiently near each other in diameter to cause the burner-tube and regulator-body to guide the float as it rises and falls and prevent it from canting and fouling. As shown, the float M is formed with small gas-perforations *m m*, which may be omitted, if desired, as it is intended that the main body of the gas at least shall pass down over the regulator-body and under the lower edge of the float and then upward into the burner-tube over the outer face of the

float. The construction shown by Figs. 3 and 4 operates in the same manner as the construction shown by Figs. 1 and 2, and therefore it will be unnecessary to rehearse the way in which the device operates.

I am aware that it is old to use as a gas-regulator a cup-like float located within the body of a gas-burner and vertically movable therein for operating a valve, the stem of which is attached to it and which coacts with a valve-seat formed in a chambered body-piece also located within the burner-body, and I do not claim such construction broadly.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a gas-regulator, the combination with a cylindrical cup-like sheet-metal regulator-body, formed at its upper end with a centrally-arranged valve-seat, and adapted at its lower end to be shoved into a burner-body for frictional retention therein; of a vertically-movable cylindrical sheet-metal cup-like regulator-float, setting over the upper portion of the said regulator-body; and a valve located within the said regulator-body, coacting with the valve-seat thereof, and formed with a stem extending upward through the said valve-seat and into the float to which it is attached, the said regulator-body and float being adapted in diameter to form an annular gas-passage between the regulator-body and the float, and between the float and the adjacent portion of the burner-body into which the regulator is introduced so as to permit the gas rising through the valve-seat into the float to flow downward over the regulator-body and under the lower edge of the float, and then upward over the outer face of the same into the burner-body, and the diameters of the said parts being also adapted to cause the float and the adjacent portion of the burner-body to guide the float in its vertical reciprocations, and prevent it from canting, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

NATHANIEL SLEEMAN.

Witnesses:

FRED. C. EARLE,  
LILLIAN D. KELSEY.