M. LEES.
Gas-Regulator.

No. 209,905. Patented Nov. 12, 1878.

Fig. 1.

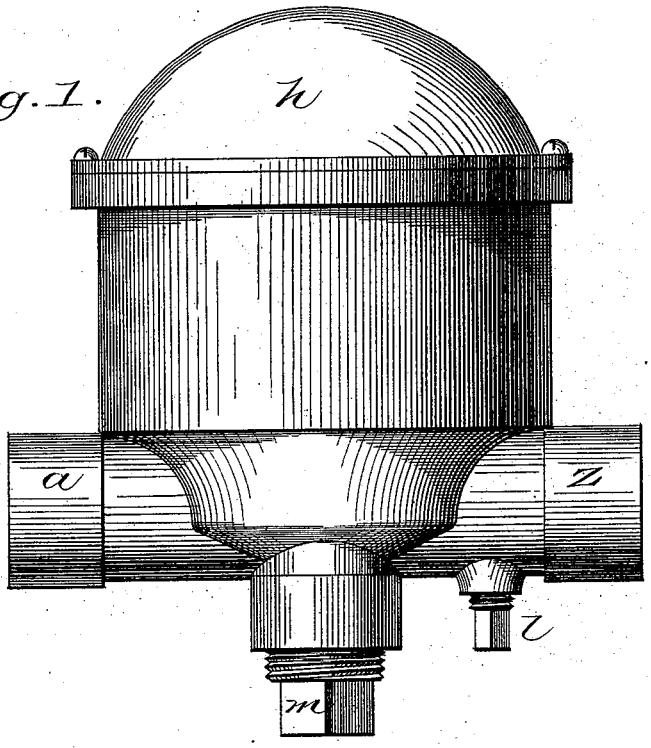
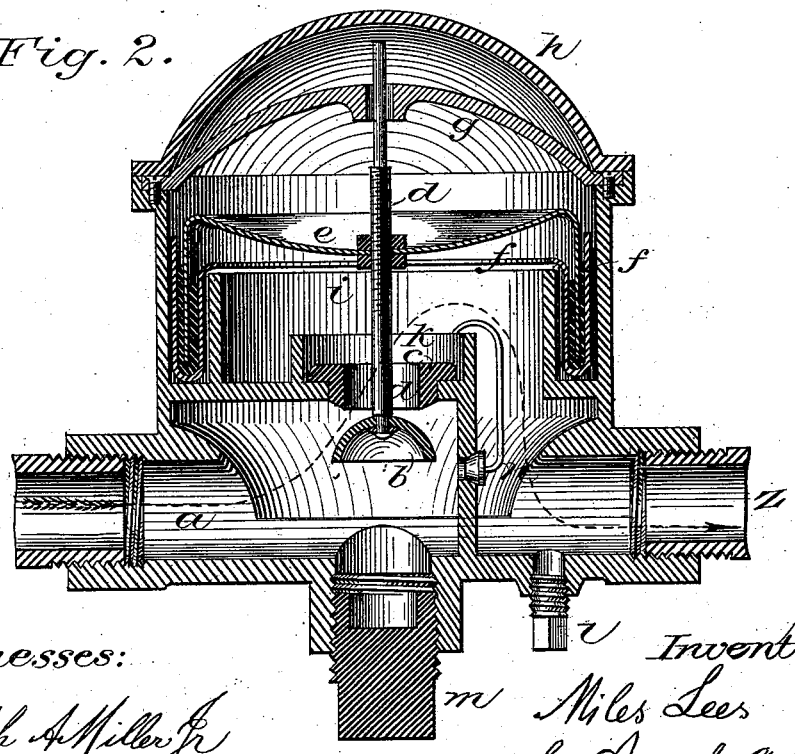


Fig. 2.



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MILES LEES, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN GAS-REGULATORS.

Specification forming part of Letters Patent No. **209,905**, dated November 12, 1878; application filed September 9, 1878.

To all whom it may concern:

Be it known that I, MILES LEES, of the city and county of Providence, and State of Rhode Island, have invented new and useful Improvements in Gas-Regulators; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a view of my improved gas-regulator, and Fig. 2 is a vertical sectional view of the same.

The object of the invention is to produce an automatic gas-regulator by which the gas-supply is controlled and regulated, which shall be more complete in its operation than gas-regulators as heretofore constructed.

The invention consists in providing a gas-regulator with a detachable annular mercury-basin made of glass, in which the float rises and falls so as to form a mercury-seal.

It further consists in the arrangement, in connection with the mercury-seal, of an overflow-receiving space to hold the mercury and prevent it from flowing into the valve; and it further consists in the application to a gas-regulator of a safety or relief valve, all of which will be more fully set forth hereinafter, and pointed out in the claims.

In the drawings, *a* represents the inlet to the regulator, the path of the gas through the regulator being shown by an arrow. *b* is the valve, usually made of metal, but preferably made of glass, as also the valve-seat *c*, as the same is not affected by the gas, and when properly constructed will last a long time. *d* is the valve-stem, to which the valve and the float *e* are secured. *f f* is an annular mercury-cup, set into the regulator on suitable packing, so as to fit gas-tight, but made removable, so that the same can be lifted out of the regulator and the mercury emptied, the cup cleaned and replaced without disturbing the regulator or breaking the pipe-connections. *g* is the stirrup in which the valve-stem is guided. *h* is the cover of the regulator. *i* is an annular ring, between which and the outer case the removable mercury-cup is inserted. The removable annular cup *f* is made of glass or other material which will resist the corrosive action of mercury. *k* is an annular ring or rim, arranged to prevent any mercury flowing over the edge of the cup *f* from entering the valve-opening. It may be extended so as to join the rim *i* around the exit-opening, or simply around the valve, so that the waste mercury will flow to the exit end of the regulator, and can be drawn off by the plug *l*. As the exit-pipe Z is screwed into the regulator, and thus forms a shoulder, the mercury will not run into the exit-pipe, but lodge in the regulator, from which it is drawn. *m* is a central plug, by which the opening is closed through which the valve is inserted into or withdrawn from the regulator. *n* is a spring-pressed relief-valve, by which any sudden pressure in the gas-supply is released.

When by some means the pressure in the supply-pipe suddenly rises when the valve *b* is nearly closed, this sudden pressure, acting on the valve *b*, will close the same, and thus during the existence of this extra pressure no gas can pass through the regulator, and the supply would entirely cease and the lights become extinguished. The relief-valve *n*, being held by a spring-pressure greater than the usual pressure in the supply-pipes, will open under the extraordinary or sudden pressure, and a small quantity of gas will be allowed to pass through the same until the sudden pressure subsides.

The operation of the regulator is as follows: The gas enters the regulator at *a*, and passes through the valve *b*, as shown by the arrow, and out at Z to the burners, where only a limited quantity is used. The gas presses against the float *e*, which, being weighted to correspond with the desired pressure, will be raised by a greater pressure, and, lifting the valve *b*, contract the supply; and when more burners are lighted and the pressure is reduced, the float and valve will fall and admit sufficient gas to maintain the desired pressure, no matter whether one or a hundred lights are burning.

I am aware that the float, valve, and mercury-seal have before my invention been used in gas-regulators. This I do not claim, broadly.

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

1. The combination, in a gas-regulator, with the float *e* and valve *b*, of the removable annular mercury-cup *f*, constructed and arranged substantially as shown, and for the purpose described.

2. The combination, with the float *e*, the removable annular mercury-cup *f*, and guard-rim *k*, of the tap *l*, arranged substantially as and for the purpose set forth.

3. The combination, in a gas-regulator, with the valve *b*, regulating-float *e*, and removable mercury-cup *f*, of the relief-valve *n*, constructed and arranged for operating substantially as and for the purpose set forth.

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