P. MUNZINGER.

GAS-GOVERNOR.

No. 187,042. Patented Feb. 6, 1877.

Fig: 1

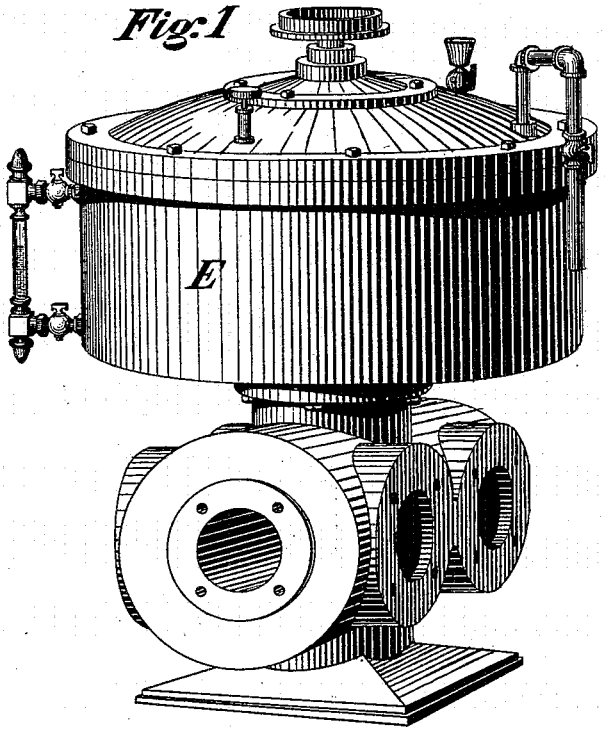
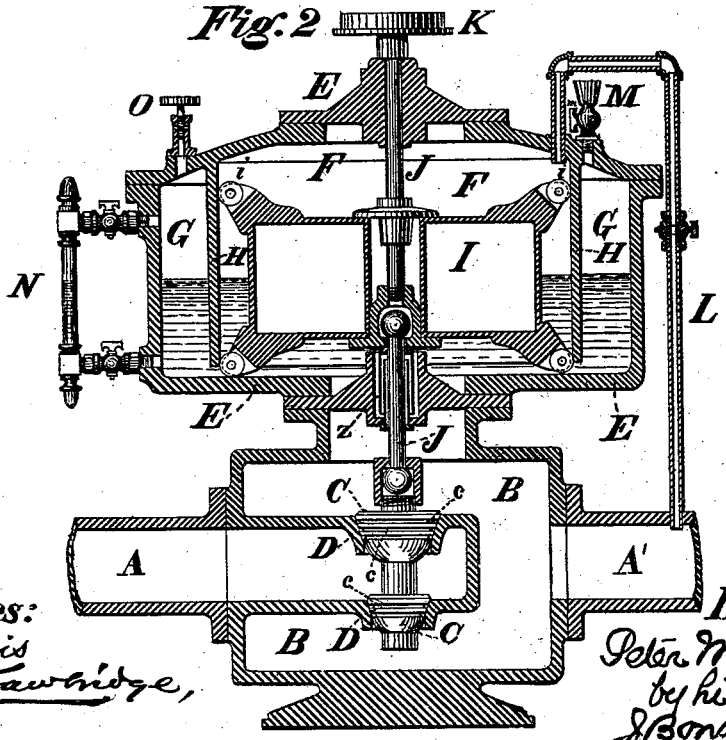


Fig: 2



Witnesses:
C. B. Morris
W. C. Hawkridge,

Inventor.
Peter Munzinger
by his Attorney
J. Bonsall Taylor

UNITED STATES PATENT OFFICE.

PETER MUNZINGER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO MORRIS, TASKER & CO., (LIMITED,) OF SAME PLACE.

IMPROVEMENT IN GAS-GOVERNORS.

Specification forming part of Letters Patent No. **187,042**, dated February 6, 1877; application filed December 20, 1876.

To all whom it may concern:

Be it known that I, PETER MUNZINGER, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Gas Governors or Regulators, of which I hereby declare the following to be a full, clear, and precise description, and sufficient to enable those skilled in the art to which my invention appertains to comprehend and construct it.

My invention relates to that class of devices which are employed to govern and limit the flow of gas according to the elevation of the locality to be supplied to maintain an equable pressure, and to equalize the flow of gas in the main notwithstanding varying pressures; is of especial applicability on the pipes connecting gas-holders with street gas-mains, but can be placed on any main or pipe where the pressure of gas is to be regulated and the actual flow controlled.

It consists in a device substantially hereinafter set forth for utilizing back pressures of gas to regulate and equalize automatically the flow of gas.

Of the drawings, Figure 1 is a perspective view of a governor embodying my invention; Fig. 2, a central sectional elevation of the same.

Similar letters of reference indicate corresponding parts wherever used.

A is a inlet-pipe leading from the gas-holder or other source of supply into a valve-chamber, B. A′ is the outlet-pipe, itself being or leading to a street-main or other discharging contrivance. C C are cone-valves, adjusted in seats D D in the closed end of the inlet-pipe. The valve-chamber being a compartment without aperture save in the outlet-pipe A′, it is obvious that when the valves C are lifted the gas will flow out of the inlet-pipe into the valve-chamber, and thence escape by the outlet-pipe. The valve-cones (and their seats, if desired) are provided with circumferential corrugations *c c*, adapted to contain gas, so as to form a gas cushion or packing for the valve-cone with respect to its seat, to ease any frictional action and pack the valve when shut.

E is a cylindrical float-holder fitted on top of the valve-chamber, and divided inside into a central circular space, F, and a surrounding annular space, G, by means of the cylindrical diaphragm H, which is secured above to the cover-plate of the float-holder, but is open below to allow of a free circulation of the water with which the float-holder is partially filled, and on which the valve-float I rests. This valve-float is preferably constructed of light sheet metal, made gas and air tight, and is provided with friction-rollers *i i*, bearing against the diaphragm to ease its rise and fall.

J is a float-stem, passing up through the top of the holder, through a stuffing-box or other gas-tight device. On its projecting upper extremity it bears a weight-cup, K, adapted to receive a series of counterbalancing weights. The float-stem also passes down below the float through a mercurial seal, Z, to prevent the water in the float-chamber flowing down into the valve-chamber; and, being concentric with their axes, is connected rigidly or jointedly, as shown, to the valves. Hence it follows that an elevation or depression of the float will be accompanied by a corresponding elevation or depression of the valves, and vice versa. The mercurial seal is of ordinary construction, and fitted in any convenient manner between the float-holder and valve-chamber, so as to prevent any escape of the water in the holder into the valve-chamber. L is the back pressure-pipe, springing from the outlet or main A′, and communicating with the circular interior space F of the holder. M is a water-feed cup, by which to supply the holder with water, and N a water-gage to ascertain the level of the same within the holder. O is an air-cock communicating with the annular space G of the holder, and adapted to control the amount and tension of the air within said space above the water.

Such being the construction of my governor, its operation is as follows: The holder being supplied with water, the feed-cup cock *m* is closed, and the weight-cup K laden with a weight accurately calculated to be overcome by the given flow of gas into the inlet-pipe so as to permit the lifting of the valves, and the consequent escape and flow of gas into the main A′. Such is the operation under an equalized flow of gas. When, however, back pressures arise, tending to back up the gas

into the valve-chamber, inlet-pipe, and holder, it becomes essential to arrest the supply until the back pressure diminishes, which arrest is automatically accomplished by my device, as follows: When driven or expanding backward, the gas rushes up the back pressure-pipe L into the gas-space F of the float-holder, and, acting upon the float I, depresses it proportionately to its power, and so proportionately closes the valves, being aided thereto by the counterbalancing-weight.

In the forced descent of the float, the water is driven from the inner circular space F into the surrounding annular space, thereby compressing the air in the same above the former level of the water, the expansion of which air, when the back pressure of gas has diminished, aids in the ascent of the float and the reopening of the supply-valve by expelling the water from the surrounding into the central space of the holder, (whereby the float to which said valves are connected is again raised,) until the former level is reached.

It will be readily understood that this whole action is proportionate, and that a slight back pressure will only partially close the supply-valve while a strong pressure will tighten them up absolutely. The tension of the compressed air is to be regulated by a regulation of the amount of air permitted to be in the annular space.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. As a device for regulating by means of back pressures of gas the inlet-valves C C of a gas-regulator, to the total or proportional exclusion of inflowing gas, a float, I, connected with said valves and adapted to be acted upon and depressed by back pressure of gas, substantially as described.

2. In combination with the annular air-space G, the air-cock O, adapted to regulate the air within said space, substantially as described.

3. The float space F, in combination with the outlet or main A′, by means of the back pressure-pipe L, as and for the purpose set forth.

4. The combination of the valves C C with the float I and weight-cup K, by means of the stem J, as specified.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PETER MUNZINGER.

Witnesses:

J. BONSALL TAYLOR,

LISLE STOKES.