(No Model.)

J. S. CONNELLY.

GAS REGULATOR.

No. 564,047. Patented July 14, 1896.

Fig. 1.

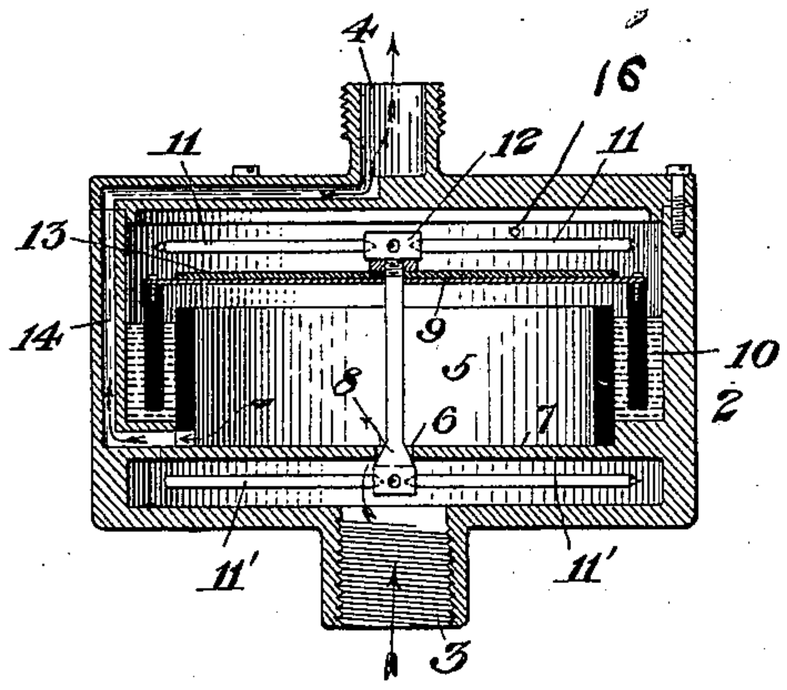
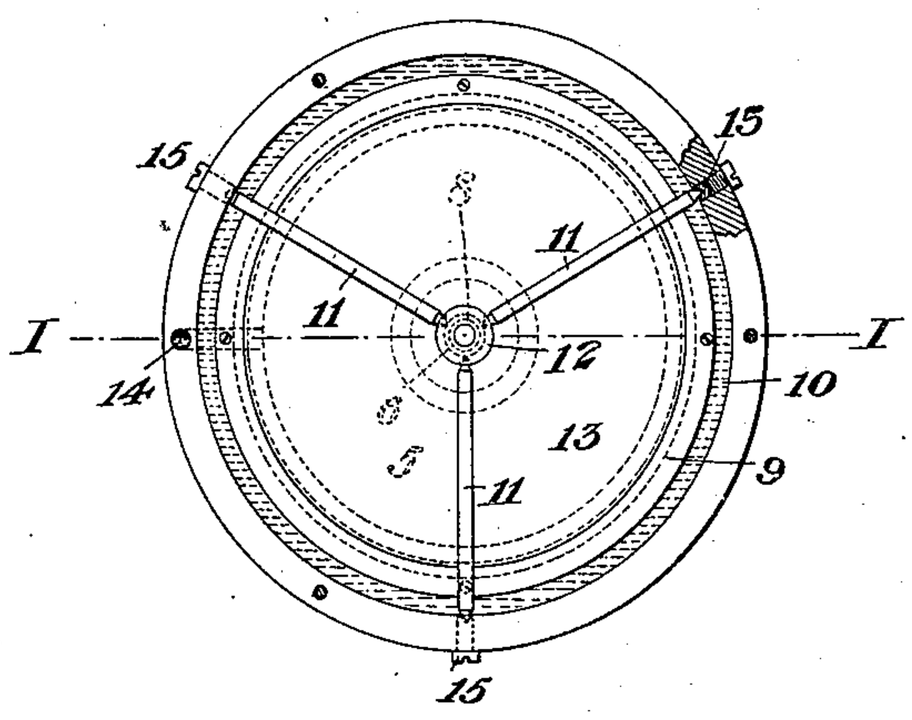


Fig. 2.



WITNESSES

Thomas W. Bakewell

T. A. Sommerville

INVENTOR

John S. Connelly.

UNITED STATES PATENT OFFICE.

JOHN S. CONNELLY, OF TITUSVILLE, PENNSYLVANIA, ASSIGNOR TO THE CONNELLY-CRITCHLOW COMPANY, OF SAME PLACE.

GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 564,047, dated July 14, 1896.

Application filed February 5, 1896. Serial No. 578,115. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. CONNELLY, residing at Titusville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in Gas-Regulating Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows my improved apparatus for regulating the pressure of gas in vertical section on the line I I of Fig. 2, and Fig. 2 is a plan view of the same with the cover removed.

My invention is designed to afford a regulating device for regulating the pressure of gas with great accuracy and delicacy of operation. I have especially designed it for use with burners of the Welsbach type, employing natural gas or gas derived from such source that its pressure is subject to fluctuation to a considerable extent, which fluctuation, unless overcome by accurate regulation, will soon destroy the incandescent portion of the burner. I desire it to be understood, however, that the apparatus is not limited to use in connection with such burners, but is of general application.

The invention consists in using, instead of the ordinary guides employed for guiding the moving parts of gas-pressure regulators, of the character hereinafter described, a guiding device, consisting of laterally-extending rods or holders, yieldingly connected at one end with the moving apparatus, and yieldingly connected also at the other end, so that as the parts of the regulator move they shall be caused to travel in straight lines and with very little friction. The apparatus is thus made very delicate and quick to respond to slight changes in pressure.

In the drawings, 2 represents the case of the regulator.

3 is the gas-inlet pipe.

4 is the outlet-pipe.

5 is the regulating-chamber, having a port 6, extending through a diaphragm 7 and connecting it with the inlet 3.

8 is the regulating-valve, which seats inwardly against the port 6, and is of suitably-tapering form. Its stem is connected to a cup-float or diaphragm 9, situate in the chamber 5 and having its periphery immersed in a circular body of mercury or other suitable liquid 10. Above the float or diaphragm the valve-stem, or a projection from the float or diaphragm itself, is provided with guiding devices consisting of rods 11, pointed at both ends, fitted at the inner ends in sockets or cavities in a head 12 of the stem, and at the outer ends fitted against the bases of concavities at the ends of stops formed by adjusting-screws 15, which project inwardly through the case. The valve is also preferably provided with similar guiding-rods 11′, arranged in like manner on the under side of the diaphragm 7. As the valve and float move vertically in the operation of the apparatus, the rods 11 11′ will form a perfect guide, causing them to move in straight lines, and as the rods are flexibly supported at the ends they will move freely and with so little friction as to be practically inappreciable.

16 is an air-vent above the float or diaphragm.

The operation is as follows: The float or diaphragm having been weighted by a suitable weight 13, adapted to reduce the pressure of the gas passing through the apparatus to the desired degree, the entrance of gas to the chamber 5 through the port 6 (if the gas be of greater pressure than that for which the instrument is set) will raise the float or diaphragm so as to throttle the valve-port 6 and reduce properly the pressure of the gas passing from the chamber 5 through the port 14 to the outlet. If the pressure of the incoming gas should diminish at any time, the float or diaphragm will drop correspondingly, so as to widen the opening of the port and to preserve constant the pressure of the outgoing gas. My apparatus enables these operations to be performed with very great delicacy and quickness.

As above noted, the rods 11 11′ are situated at the end portions of the stem, one set of rods being on the outer side of the valve and the other set of rods being on the outer side of the diaphragm. This position of the parts is of importance, because by providing the moving mechanism with such delicate guiding and holding apparatus at its end portions

the apparatus is caused to work with great accuracy, the parts are prevented as much as possible from being distorted by strains, and the regulator will work effectively even when not set in a level position. By placing the rods in such location, moreover, they may be easily made of the same length and extend to the case of the instrument. The apparatus can be made of remarkably small size without impairing its accuracy of operation.

Instead of the cup-shaped float shown in the drawings, a diaphragm connected at its edges to the case or other equivalent apparatus may be used; and within the scope of my invention, as defined in the claims, changes may be made in the structure and relative arrangement of the parts.

I claim—

1. In a gas-regulator, the combination of a regulating-chamber, having a port, a float or diaphragm, a valve controlling the port and having a stem extending from the float or diaphragm, and guides consisting of a set of rods extending laterally from the stem on the outer side of the float or diaphragm, and a second set of rods extending laterally from the stem at the outer side of the valve, both sets of rods extending to and bearing in sockets in the case of the regulator substantially as described.

2. In a gas-regulator the combination of a regulating-chamber, having a port, a float or diaphragm, a valve controlling the port and having a stem extending from the float or diaphragm, and guides consisting of a set of rods extending laterally from the stem on the outer side of the float or diaphragm, and a second set of rods extending laterally from the stem at the outer side of the valve, and radially-adjustable stops against which the outer ends of the said rods bear, substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN S. CONNELLY.

Witnesses:

G. I. HOLDSHIP,

H. M. CORWIN.