

(No Model.)

J. T. THORPE.
GAS CONTROLLER.

No. 536,108.

Patented Mar. 19, 1895.

FIG. 1.

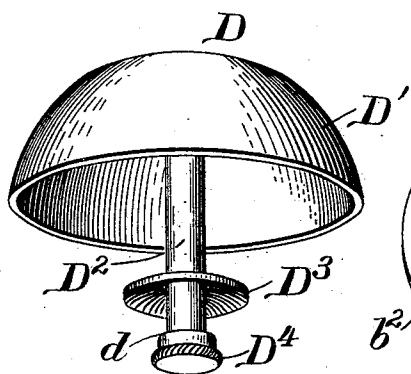
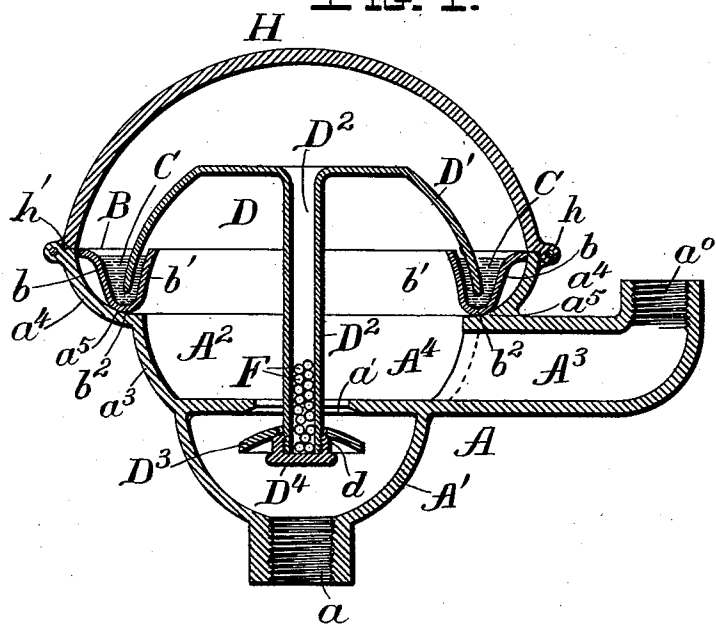


FIG. 2.

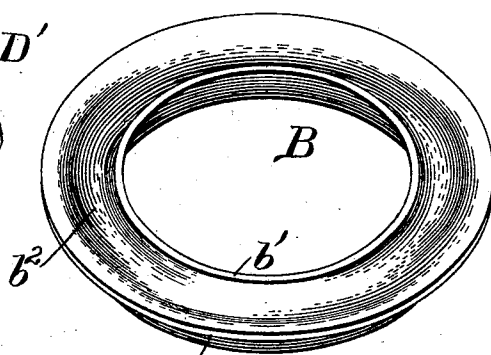


FIG. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN THOMAS THORPE, OF NEW ORLEANS, LOUISIANA.

GAS-CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 536,108, dated March 19, 1895.

Application filed November 6, 1894. Serial No. 528,088. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMAS THORPE, a subject of Her Imperial Majesty the Queen of the United Kingdom of Great Britain and Ireland and Empress of India, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Gas-Controllers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in gas-controllers intended to regulate the flow of gas at any desired pressure, and it is especially intended to provide a simple and accurate gas controller which is not likely to get out of order, is readily adjusted, and may be cheaply made.

The invention is intended to cover certain improvements on the gas regulator shown in the patent to Foster, No. 30,399, granted October 16, 1860.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a central vertical section through the gas controller. Fig. 2 represents a perspective view of the inverted pressure cup supporting the valve stem and valve, and detached from the apparatus; and Fig. 3 represents a perspective view of the detachable trough for holding the mercury.

A represents the casing which is provided with the valve chamber A', the pressure chamber A², the gas delivery passage A³, and is provided with a screwthreaded inlet opening *a* and a similar opening *a*⁰ through which the gas is admitted to, and escapes from the controller. Between the valve chamber A' and the pressure chamber A² is a diaphragm A⁴ provided with an inverted valve seat *a*¹ so arranged that the valve D³ will bear against the same when pressed upward.

B represents a detachable annular trough having flaring sides *b* and *b*¹, and partly filled with mercury C when in use.

D represents the float which is provided with an inverted cup D', and a hollow valve stem D² stamped out of the bottom thereof.

On this valve stem D², the valve D³ is loosely mounted, and normally rests on the rounded base *d* of the screw cap D⁴ which forms the bottom of the hollow valve stem. The said valve D³ consists merely of a curved annular plate, bent downward so as to form a zone of a sphere.

The top of the casing is closed with a cap H hinged at one side as at *h*, and fastened at the other as at *h*¹ in any convenient way, whereby dust, &c., is prevented from falling on top of the inverted pressure cup, and into the hollow valve stem thereby affecting the adjustment of the valve.

The pressure to be exerted on the interior of the inverted cup is regulated by dropping the desired amount of fine shot or other convenient weights into the hollow valve stem D². The position of these shot at some distance below the lower edge of the inverted cup will bring the center of gravity of the float low down, and will tend to preserve the cup in an approximately horizontal position.

It will be obvious that as long as the pressure of the gas in the pressure chamber A² exerted upward upon the pressure cup, is less than the weight of the said cup and connected parts, gas will flow through the controller, but when the pressure is sufficient to lift the float, the valve will be lifted by the valve stem to its seat, will stop the flow of gas until the pressure in the pressure chamber falls, when the valve will open again permitting the further flow of gas through the pressure chamber while the amount of immersion of the float in the mercury C will give a nice adjustment to the pressure of the gas in the pressure chamber.

Owing to the peculiar shape of the valve and its being loose on the valve stem, it will tend to center the valve stem on the valve seat, and at the same time will wear evenly all around.

The loose valve obviates the necessity for guides, and thus makes a more efficient and durable controller, as there is nothing to stick and clog by the contact with the residuum deposited from the gas, and in addition all oscillation of the cup and attachments is taken up by the loose valve as soon as the pressure raises the float. The higher the pressure the surer is the cut-off. The dis-

tance through which the valve is to be moved upward by the float in order to close the valve passage, may be regulated by means of the screw cap D⁴.

5 It will be obvious that various modifications of the herein described apparatus might be made which could be used, without departing from the spirit of my invention.

10 Having thus described the invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a gas controller, the combination with a casing provided with a diaphragm separating the said casing into a valve chamber and
15 a pressure chamber with a valve seat in said diaphragm, of a removable annular trough partly filled with mercury placed in the upper part of said casing, the said trough having its inner side concave as shown; an inverted
20 cup in the approximate form of a zone of a sphere and of a slightly larger radius than the inner wall of the trough, having its rim projecting into the mercury in said annular trough and approximately parallel to
25 said inner side of said annular trough, and provided with a hollow cylindrical valve stem projecting downward from the center thereof, and a valve adapted to bear on said valve seat when the pressure in said pressure chamber

exceeds a pre-determined limit, substantially 36 as and for the purposes described.

2. In a gas controller, the combination with a casing provided with a diaphragm separating the said casing into a valve chamber and a pressure chamber with a valve seat in said
35 diaphragm, of an annular trough having sides flaring outward and being partly filled with mercury, the said trough being mounted in the upper part of said casing; an inverted cup in the form of a zone of a sphere having its rim
40 projecting into the mercury in said annular trough and with a hollow cylindrical valve stem projecting downward from the center thereof, adjustable weights in said valve stem near the base thereof, a curved valve loosely
45 mounted on said valve stem, and adapted to bear on said valve seat when the pressure in said pressure chamber exceeds a predetermined limit, and a screw cap rounded at its upper edge and supporting said curved valve, 50 substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN THOMAS THORPE.

Witnesses:

CARLETON HUNT,
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