

M. G. WILDER.
Gas-Regulator.

No. 223,570.

Patented Jan. 13, 1880.

Fig. 1.

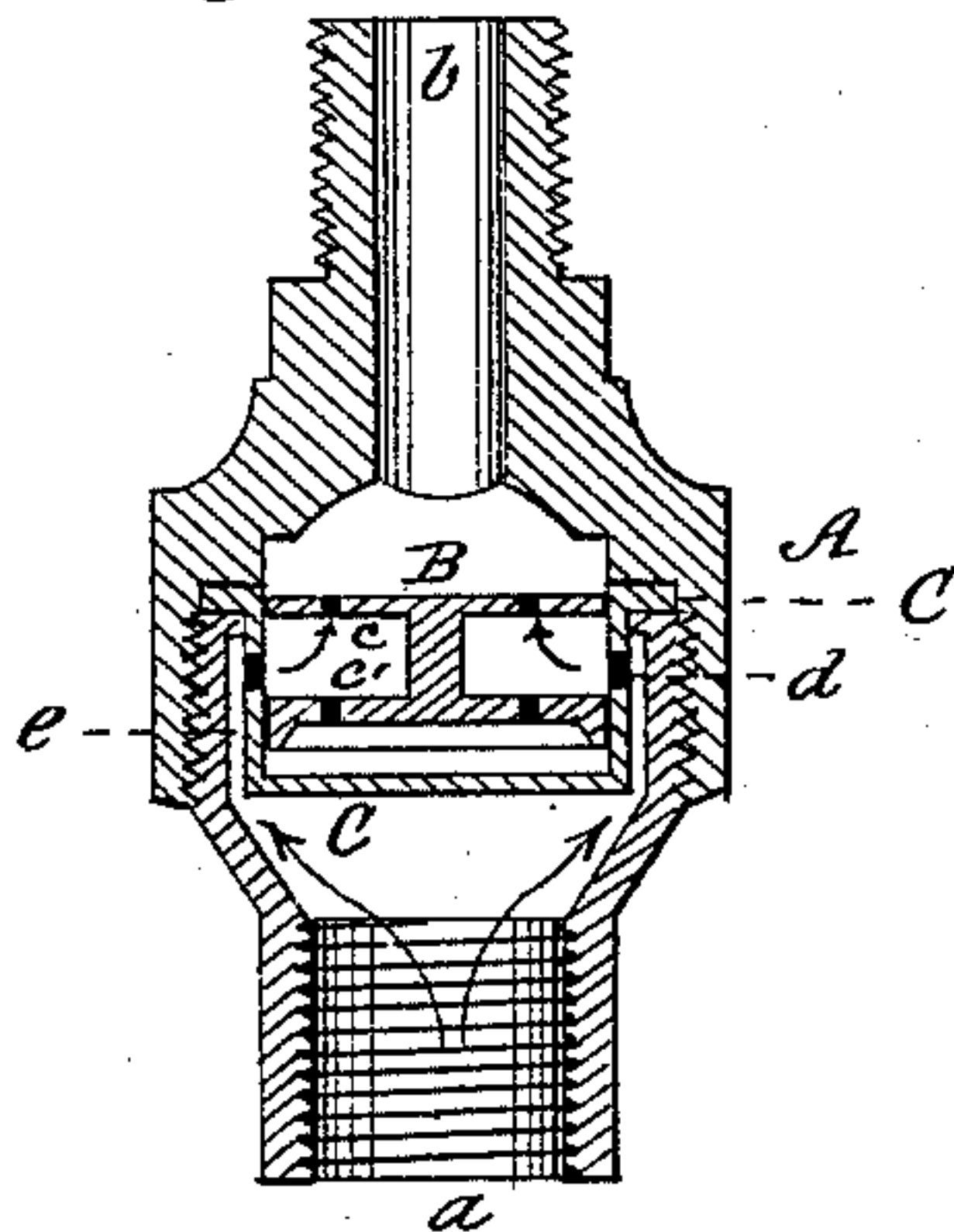


Fig. 2.

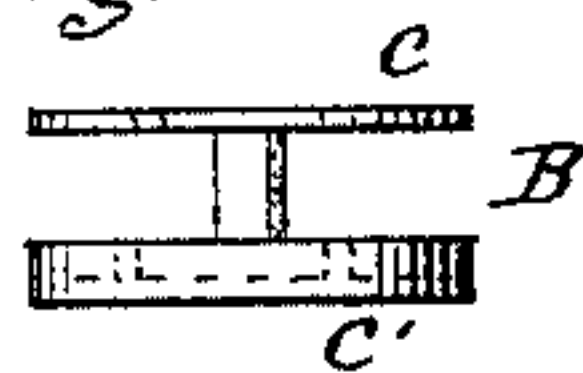


Fig. 3.

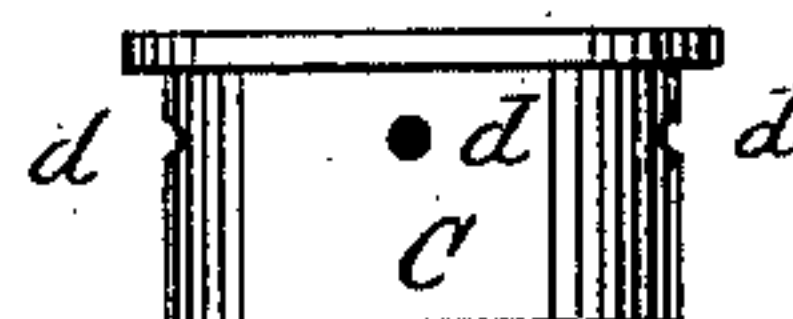
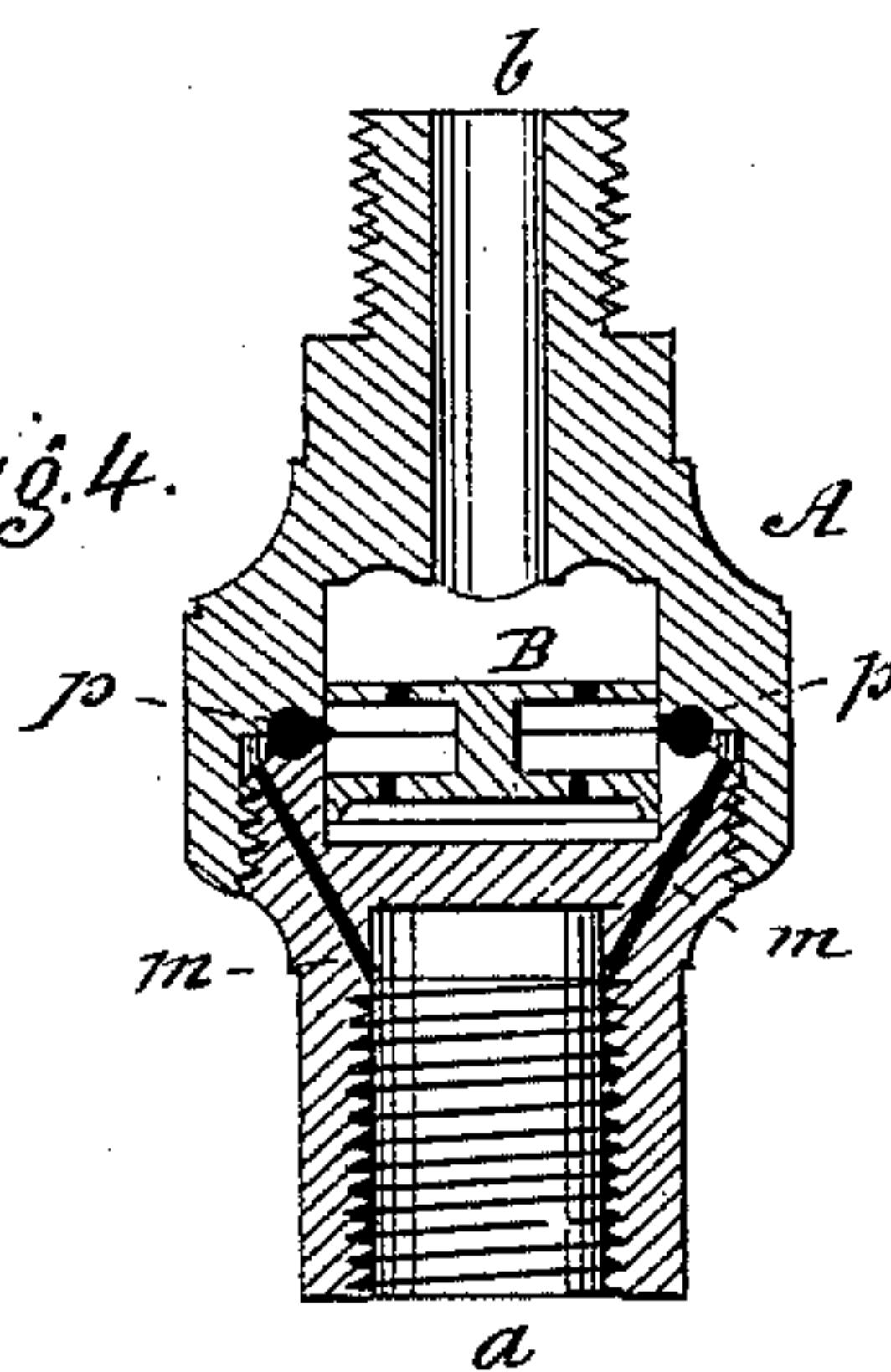


Fig. 4.



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UNITED STATES PATENT OFFICE.

MOSES G. WILDER, OF BROOKLYN, NEW YORK.

GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 223,570, dated January 13, 1880.

Application filed October 22, 1879.

To all whom it may concern:

Be it known that I, MOSES G. WILDER, of the city of Brooklyn, in the county of Kings and State of New York, have invented an Improved Regulator for Gas and other Fluids; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

The object of this invention is to construct a regulator for controlling the flow of gas and other fluids under pressure, in such a manner that it shall maintain a constant delivery of a predetermined quantity in a given time, whatever changes may occur in the degree of pressure under which the gas or fluid is supplied or in the size of the nozzle through which it is discharged from the regulator.

It is especially designed for regulating the supply of illuminating-gas to gas-burners, but may also be used with like effect for regulating the supply of various fluids under pressure; and although I shall herein, for the sake of brevity, describe it as a gas-regulator, I desire it to be understood that I do not confine myself to its use for that purpose exclusively.

The invention consists in a weight or check in the form of a disk, having perforations, through which the gas passes to the burner, which said check fits and works in the interior of the gas-chamber, in connection with inlets, through which the gas passes from the supply-pipe, being arranged in such manner that whenever the degree of pressure in the chamber is sufficient to force the predetermined quantity of gas through the perforations in the check the latter, by reason of this pressure, will be lifted and sustained, and whenever the outer pressure (or volume) is increased the check will rise, and thereby partially or wholly cover the inlets and diminish or cut off the supply, and, on the other hand, whenever the pressure falls below that degree the check will descend and thereby uncover the inlets, and consequently increase the supply into the chamber.

The invention also further consists in the improved construction and combination of parts, as hereinafter particularly described.

In the accompanying drawings, Figure 1 represents a vertical transverse section of my

improved regulator. Figs. 2 and 3 are detail views, hereinafter referred to and explained; and Fig. 4 shows a modification of my invention.

Similar letters of reference indicate the same parts in all the several figures.

A is the main body of the regulator, the lower end, *a*, of which is connected with the supply-pipe, and to the upper end, *b*, the gas-burner or discharge-nozzle is attached.

B is the weight or check, preferably consisting of two parallel disks, *c c'*, connected at their center, and having perforations through them of suitable diameter, through which the gas passes on its way from the supply-pipe to the burner or nozzle, which said check fits and works in the gas-chamber. Fig. 2 represents a detached view of this weight or check. A convenient mode of fitting this check in the regulator is by means of a cup, C, having inlets *d*, through which the gas passes to and through the check, an annular space, *e*, being formed around the said cup, between it and the body of the regulator, for the passage of the gas. In Fig. 3 is shown a detached view of this cup.

The inlets *d d* are arranged in relation to the check in such manner that when the latter is at its lowest position their whole area will be uncovered to admit the largest supply into the chamber, and so that as the check rises the inlets will be gradually closed by the lower disk, *c'*, of the check coming opposite thereto.

The weight of the check and the size of the perforations in its upper disk are to be proportioned to the pressure at which the gas is expected to enter and the quantity to be discharged in a given time, and the check, being supported by the flow of gas through it and the pressure under it, rises or falls with every variation of pressure, (or of volume,) however small, the supply being increased when it falls and diminished when it rises, and the flow of gas through its perforations is constant, because the pressure equals, but never exceeds, the weight of the check itself, inasmuch as the inlet is controlled by the check, which diminishes the supply as it rises, and thereby maintains the equilibrium and increases the supply to maintain the pressure when it falls.

The said check, constructed and operating

as above described, also maintains a constant rate of delivery with discharge-nozzles of different sizes, because it is sustained by the pressure under it, and this pressure will always exceed the pressure above the check by the weight of the check itself, so that if the one pressure changes, (as would be the case with a change of nozzles,) the other pressure changes also, so as to maintain the equilibrium, and consequently the rate of delivery is not changed, because the velocity of the gas in passing through the nozzle is always in proportion to the pressure. The flow of gas will be constant through the perforations of the check, and the pressure at the nozzle will be such as to force out the constant amount in a given time at a velocity proportioned to said pressure, and therefore the flow from the nozzle will be independent of the size of the nozzle.

Fig. 4 represents a modification of my invention, in which the cup C is dispensed with and the check is fitted and works in the cylindrical chamber of the regulator, the gas being

admitted, through ways *m*, into an annular groove, *p*, cut in the said chamber, which said groove answers the same purpose as the inlets *d* in the former case, and the mode of operation is in all respects similar to that above described.

What I claim as my invention is—

1. The check B, provided with perforations, through which the gas passes, fitted in the chamber of the regulator, and adapted to be sustained therein by the pressure of the gas below it, and arranged substantially as described, to operate, in connection with suitable inlets, in the manner and for the purposes specified.

2. The perforated check B, in combination with the cup C, having inlets *d*, the annular space *e*, and the ingress *a* and egress *b*, as and for the purpose set forth.

MOSES G. WILDER.

Witnesses:

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