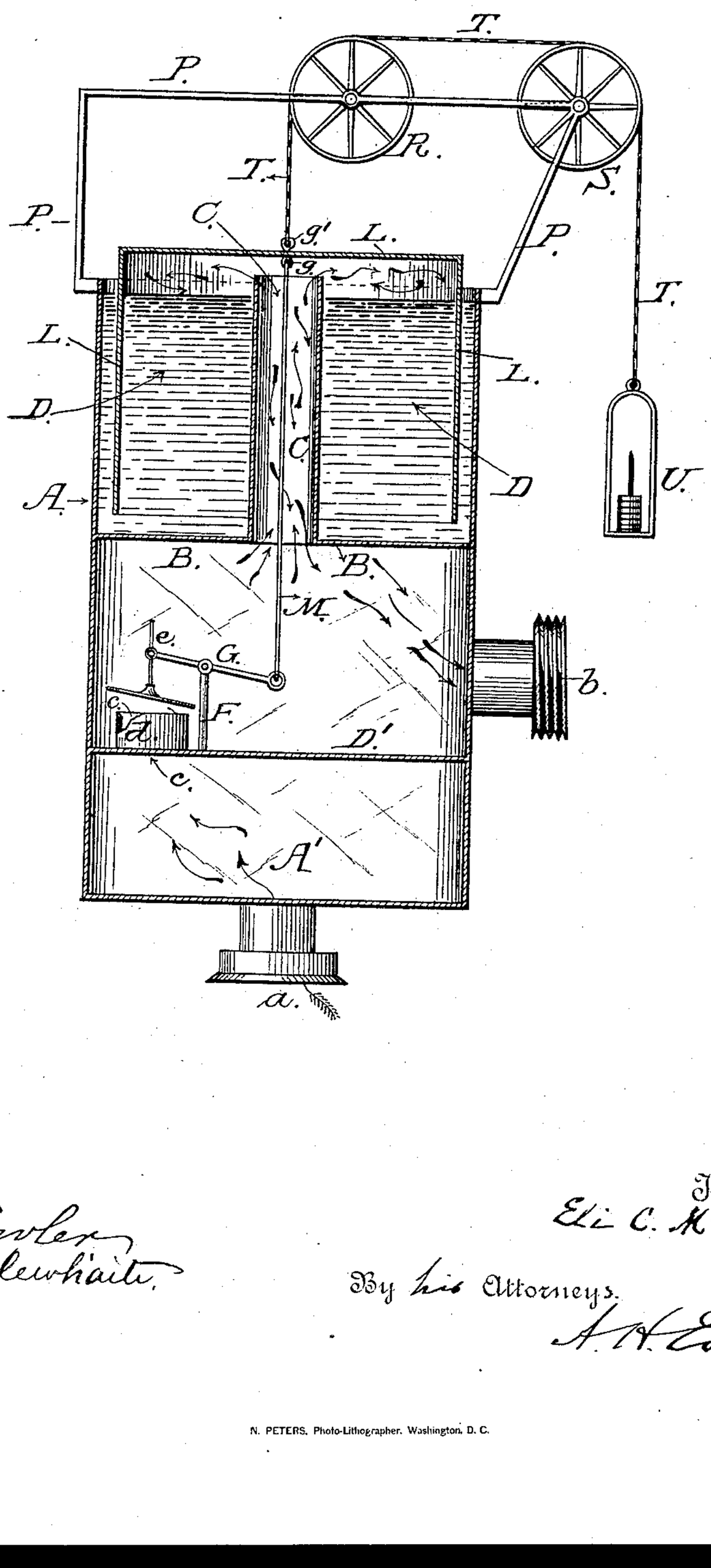
(No Model.)

E. C. McCLOY.

GAS REGULATOR.

No. 338,422. Patented Mar. 23, 1886.



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GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 338,422, dated March 23, 1886.

Application filed January 27, 1886. Serial No. 189,910. (No model.)

To all whom it may concern:

Be it known that I, ELI C. MCCLOY, a citizen of the United States, residing at Mount Vernon, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Gas-Regulators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, wherein the figure represents a sectional view of a gas-regulator embodying my improvements.

The invention relates to that class of devices or apparatus which are designed to regulate the pressure and flow of illuminating-gas through the supply-pipes of buildings; and my invention consists in certain novel constructions and combination of elements, more particularly described and claimed hereinafter, by means of which I obtain a more certain and positive action of the valve, with consequent regularity and uniformity of operation, and produce a compact apparatus simple in its construction, and embracing among its advantages durability and cheapness.

To enable others skilled in the art to which my invention appertains to make and use it, I will now describe its construction and the manner in which I have carried it out.

In the said drawing, A represents a suitable gas-holder, which is designed to be placed intermediate the gas-meter and supply-pipes of the building, it being provided with couplings *a* and *b*, the former communicating with the meter and the latter with the supply-pipe, whereby the pressure and flow of gas through the holder may be regulated and a uniform pressure of gas throughout the structure maintained regardless of the pressure from the gas-works.

The holder A is provided with a diaphragm, B, near its center, and from which extends upwardly to the top of said holder a tube or equivalent device, C, thereby forming between said tube and the holder an annular space, D, containing oil or other substance.

Between the diaphragm B and the bottom of the holder A is secured a second diaphragm, D′, provided with an opening, *c*, for the passage of the gas. Around this opening, and extending upwardly from the diaphragm D′, is a short tube, *d*, constructed, preferably, of brass, and having its upper edge beveled, thereby forming a knife-edged seat for a suitable valve, whose construction and operation I will now describe.

A post, F, projecting upwardly from the diaphragm D′, has mounted in its top a lever, G, the short arm of which has attached to it a valve-stem, *e*, having a leather disk or valve secured to its lower end, which closes the opening *c* in the top of the tube *d*, and automatically regulates the flow of gas through the holder, as I shall now describe. In the annular space D in the top of the holder A is placed a dome, L, having on its under side an eye, *g*, to which is attached the upper end of a vertical rod, M, whose lower end is connected to the long arm of the lever G. It will thus be manifest, the valve being open, the gas entering the chamber A′ finds an exit through the opening *c* and passes upward through the tube C and against the top of the dome. Under the pressure of the gas the dome now ascends, and in doing so draws upon the connecting-rod M, which, operating the long arm of the lever G, forces the valve downward upon its knife-edge seat upon the tube *d*, and cuts off the flow of gas through the holder. As the gas now contained in said holder is being consumed the pressure upon the dome decreases and permits said dome to sink in the oil contained in the annular space D, which action, by reason of the elements previously described, opens or raises the valve and permits the gas to again flow through the holder, the amount of gas passing through the opening being controlled by the distance the valve remains above the valve-seat. In addition to these devices, the holder has secured to its upper end a suitable frame or bracket, P, in which is mounted suitable pulleys, R and S, and the dome L has an eye, *g′*, to which is attached one end of a cord or chain, T, whose opposite end is provided with a weight, U, which counterbalances the weight of the dome and permits said dome to ascend and descend in the usual manner.

From this description it is manifest the device, when constructed as herein set forth, is positive in its operation, simple and cheap in its construction, and durable in its character. At the same time, by reason of the arrange-

ment herein specified, I am enabled to overcome many of the objectionable features incident to the construction of some of the devices used for a like purpose at the present time.

It is well known many gas-works generate a coal-gas containing tar, as well as sulphur and ammonia, the former of which has a tendency to gum or clog the free movements of the valve and connections, and therefore to impede the successful operation of the device. In the present case, by resting the valve upon a knife-edge seat, I am enabled to form a tight joint between the valve and seat, and also present a minimum surface to be affected by the action of tar or other foreign substance; also, by passing the connecting-rod through the tube C all danger of the said rod "sticking" is obviated, while in the use of a leather valve the injurious corrosive effect of the sulphur and ammonia is avoided.

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

1. In a gas-regulator, the holder A, provided with inlet and outlet apertures, a diaphragm, D, having a tube, *d*, projecting therefrom, a diaphragm, B, having an upwardly-extending tube, C, and a valve supported above the tube *d*, in combination with a dome, a connecting-rod passing through the tube C and attached to the dome, a lever operated by the rod, and a counter-balance attached to the dome, substantially as herein described.

2. In a gas-regulator, a holder provided with diaphragms B and D and tubes C and *d*, the upper edge of the latter being beveled to form a knife-edge valve-seat, in combination with a leather disk or valve, H, having a valve-stem, a pivoted lever to which the valve-stem is connected, a dome, and a connecting-rod between the dome and lever, substantially as herein described.

3. An improved gas-regulator comprising a holder having a diaphragm, D, with opening *c* formed therein, a tube surrounding the opening and forming a valve-seat, a post, F, projecting from the diaphragm, a lever fulcrumed in the top of the post, a valve-stem secured to the lever, a valve supported above the valve-seat, a second diaphragm, B, having an upwardly-extending tube, C, a dome, a rod within the tube and connecting the dome and lever, a frame, P, pulleys R and S, the cord or chain T, attached to the dome, and a weight attached to the cord, substantially as herein described.

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