

W. D. LEAVITT & B. J. THURSTON.

GAS AND WATER REGULATOR.

No. 188,154.

Patented March 6, 1877.

FIG. 1.

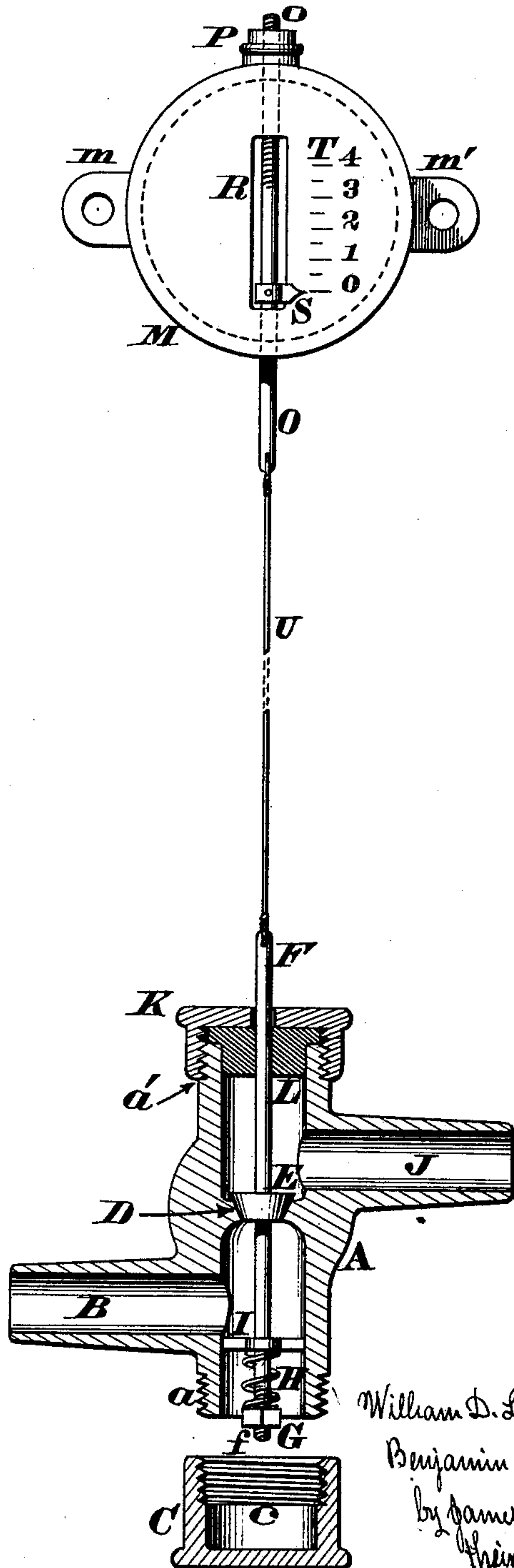
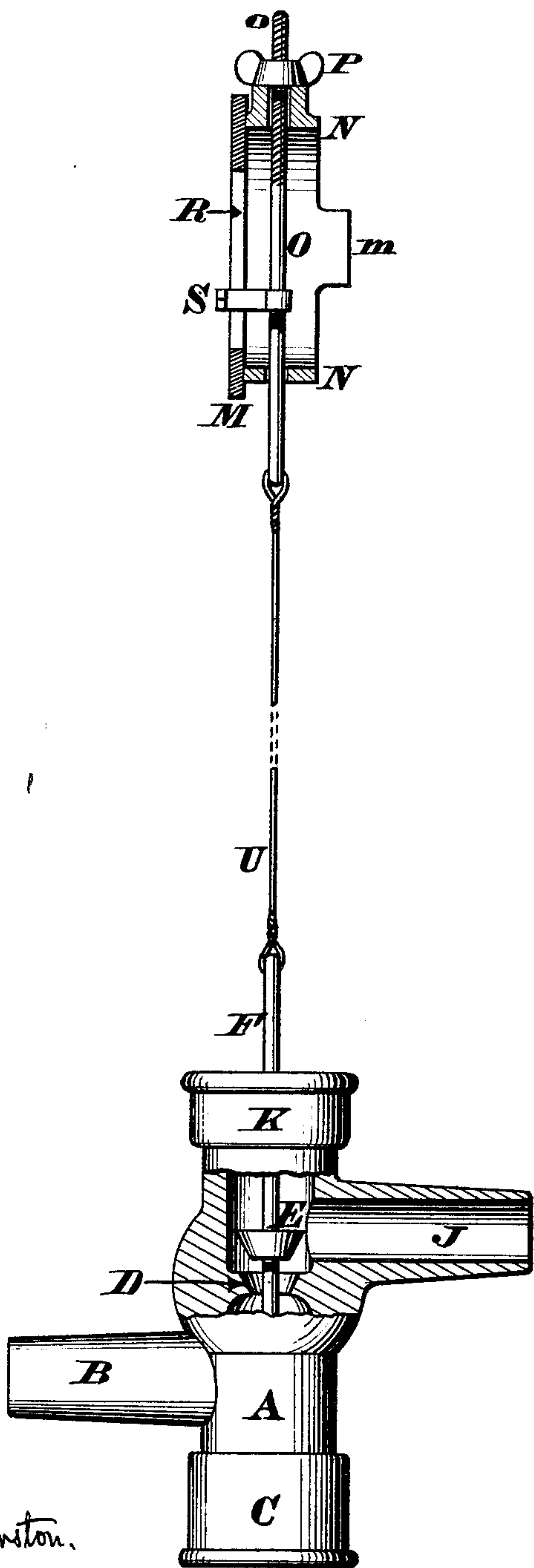


FIG. 2.



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by James H. Layman.
their Attorney.

Attest.
D. P. Kennedy.
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UNITED STATES PATENT OFFICE.

WILLIAM D. LEAVITT AND BENJAMIN J. THURSTON, OF CINCINNATI, OHIO,
ASSIGNORS OF ONE-THIRD THEIR RIGHT TO JAMES W. HADLOCK, OF
SAME PLACE.

IMPROVEMENT IN GAS AND WATER REGULATORS.

Specification forming part of Letters Patent No. 188,154, dated March 6, 1877; application filed
January 19, 1877.

To all whom it may concern:

Be it known that we, WILLIAM D. LEAVITT and BENJAMIN J. THURSTON, both of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Gas and Water Regulators, of which the following is a specification:

This invention relates to that class of devices which consists essentially of a controlling-valve placed near the meter or other source of supply, and capable of being adjusted by means of suitable appliances located in any one of the upper rooms or halls of the house, in order that the flow of gas or water may be regulated or entirely shut off without the necessity of descending into the cellar or other lower portion of the building, where inlet-pipes generally enter; and the first part of our invention comprises a novel location and arrangement of the tension-spring that maintains the controlling-valve in its normal or closed condition. These springs heretofore have been placed above the valve and confined in position by means of a stuffing-box, which construction necessitated the removal of said box whenever the spring needed adjustment, or when a new one had to be applied to the regulator for any cause whatever. To remove this stuffing-box and then insert a new spring, caused a serious derangement of the wires and other connections, which changed condition of the working parts frequently rendered the entire apparatus inoperative. Furthermore, this construction prevented any ready or convenient adjustment of the tension-spring, and, consequently, the controlling-valve would not act with regularity under varying pressures, either of water or of gas. But in our improved regulator the tension-spring is situated below said controlling-valve, and access can at any time be had to this spring by simply removing a screw-threaded cap at the lower end of the barrel or shell of the device. We are thus enabled to apply a new spring, or to adjust the tension of the old one without in the least interfering with the wires or any other of the operative parts of the apparatus.

The second part of our invention consists in applying a peculiarly-constructed index to

the device employed for opening and closing the controlling-valve, whereby the exact quantity of fluid flowing through said valve may be regulated with the greatest certainty, the details of said index and its accessories being hereinafter more fully described.

Figure 1 is a vertical section of our improved gas and water regulator, the controlling-valve being shown in its normal or closed condition. Fig. 2 is a similar section, partially in elevation, showing said valve raised from off its seat.

The principal member of the device consists of a metallic barrel or shell, A, having near its lower end a lateral projection or branch, B, which lateral is the inlet-pipe, and said pipe may be attached to the meter or other source of supply for gas or water in any appropriate manner. The extreme lower portion of this barrel is threaded at *a* to engage with the female screw *c* of the removable cap or plug C. Located above the inlet-branch B is a seat, D, for the controlling-valve E, which latter is secured to a stem or spindle, F, screw-threaded at *f* to receive a nut, G. H is a spiral spring, interposed between nut G and a stationary guide, I, of the barrel or shell A. By properly adjusting said nut G a greater or less tension may be imparted to the inclosed spring H. Located above the seat D is another lateral or branch, J, constituting the discharge-pipe of the regulator. The upper end of barrel A is threaded at *a'* to receive a stuffing-box, K, having a packing, L, to prevent leakage of water or gas around the stem F, when valve E is raised from off its seat, as seen in Fig. 2. The indicator previously alluded to consists of a plate, M, having perforated ears or lugs *m m'*, wherewith said indicator is attached to the wall or other convenient place in any of the upper apartments of the house. This plate is preferably a disk, and it is provided with an annular flange or collar, N, that serves as a guide for the shaft O, said shaft being screw-threaded, *o*, at its upper end, for the reception of any suitable form of nut, P. Furthermore, said plate is slotted vertically at R to permit the ascent and descent of a pointer, S, which is carried

by shaft O. T is a graduated scale on the exposed surface of plate M. U is a wire connecting shaft O with the stem F of controlling valve E, which wire may pass around grooved rollers when the indicator or index is not directly in line with the aforesaid controlling valve.

In case the spring H should break or should be weakened by constant use, the cap or plug C can be unscrewed and the difficulty can then be remedied in a few minutes, and without disturbing the box K or wires U, or any other parts of the apparatus. The complete removal or slight slackening of this cap or plug C will allow the pipes draining, and thus prevent the device freezing up and bursting in the winter season. When applied to gas-pipes the indicator can be set so as to regulate the number of cubic feet of gas passing through the pipes, and after a certain hour of the night the proprietor of the house can lower the controlling valve so as to permit but a very limited quantity of gas being discharged from outlet J and its connections. By this means any waste of gas, either by the carelessness of servants or otherwise, is effectually prevented.

We have described our tension-spring H as exerting a pulling action on the stem F so as to draw the valve down to its seat, but this action of the spring may be exactly reversed—that is to say, it may elevate the valve and thus cut off the flow of gas or water. Finally, lugs may be employed instead of the collar N for guiding shaft O in a proper path with reference to the indicating devices M, R, S, and T.

We are aware that it is not new to apply an adjustable tension-spring to the upper chamber of the shell of a gas and water regulator, and we are also aware of the fact that such

regulators have been provided at top with a cap whose removal affords access to the tension-spring. It is apparent, however, that the regulator can not be drained by the removal of the cap when the latter is applied to the upper end of the shell, and, consequently, such devices are liable to freeze up and become inoperative in the winter. Our claim, therefore, is limited to the location of the tension-spring and cap below the valve, in order that said cap may perform the twofold purpose of permitting access to the adjusting-nut of said spring, and also of draining the regulator of any water that may have accumulated therein, as previously described.

We claim as our invention—

1. The combination, in the shell of a gas or water regulator, of tension-spring H, located below valve E and surrounding the valve-stem F f, said spring being confined between stationary guide I and nut G, which latter is capable of adjustment upon threaded portion f of valve-stem F, when cap C c is disengaged from the lower end a of shell A, substantially as herein described, and for the purpose set forth.

2. The combination of slotted plate M R, guides N, adjustable shaft O o P, pointer S, and graduated scale T, said pointer being attached to the adjustable shaft in the manner herein described, and for the purpose set forth.

In testimony of which invention we hereunto set our hands.

WILLIAM D. LEAVITT.
BENJAMIN J. THURSTON.

Witnesses:

JAMES H. LAYMAN,
A. J. TULLIS.