

No. 614,441.

Patented Nov. 22, 1898.

A. E. BURNETT, JR.
FLUID PRESSURE REGULATOR.

(Application filed May 4, 1898.)

(No Model.)

FIG. 1.

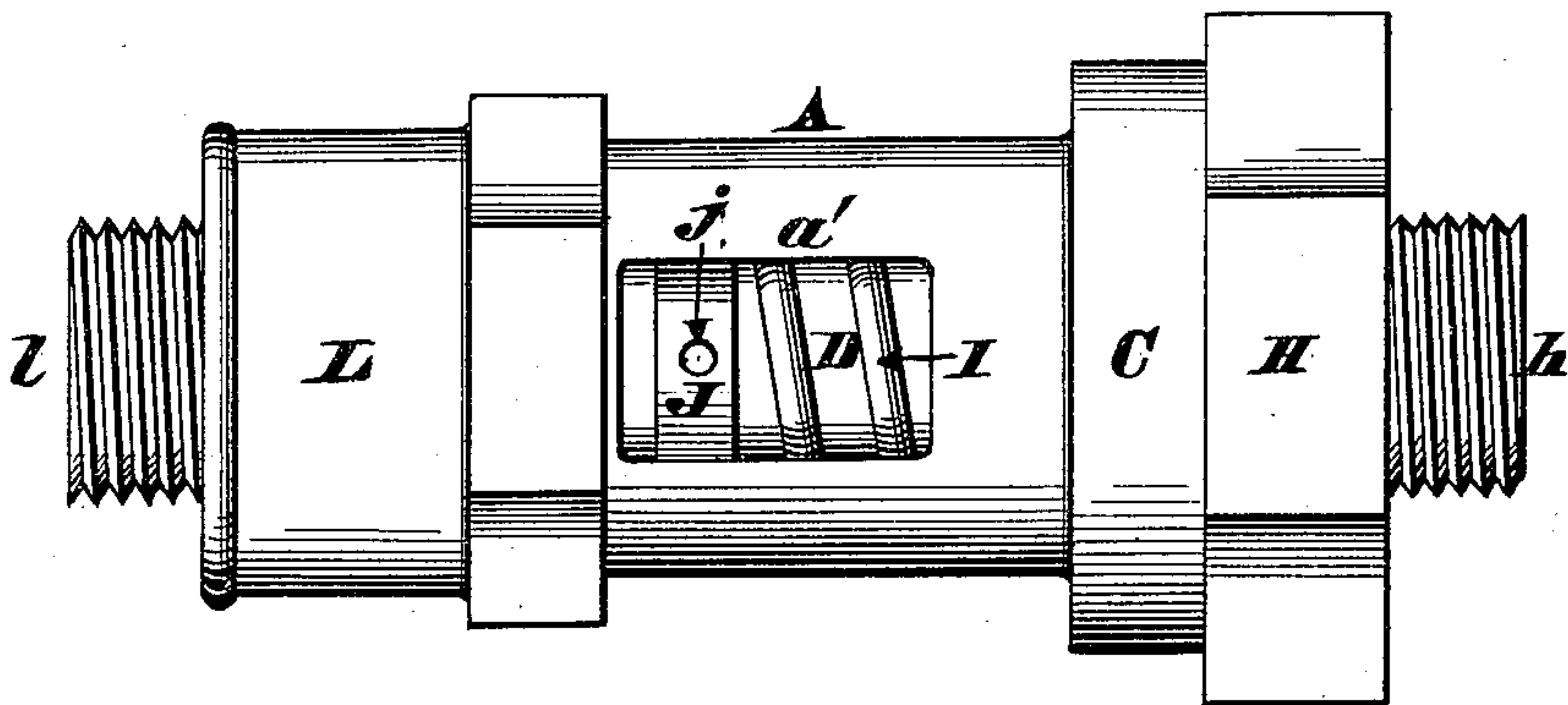


FIG. 2.

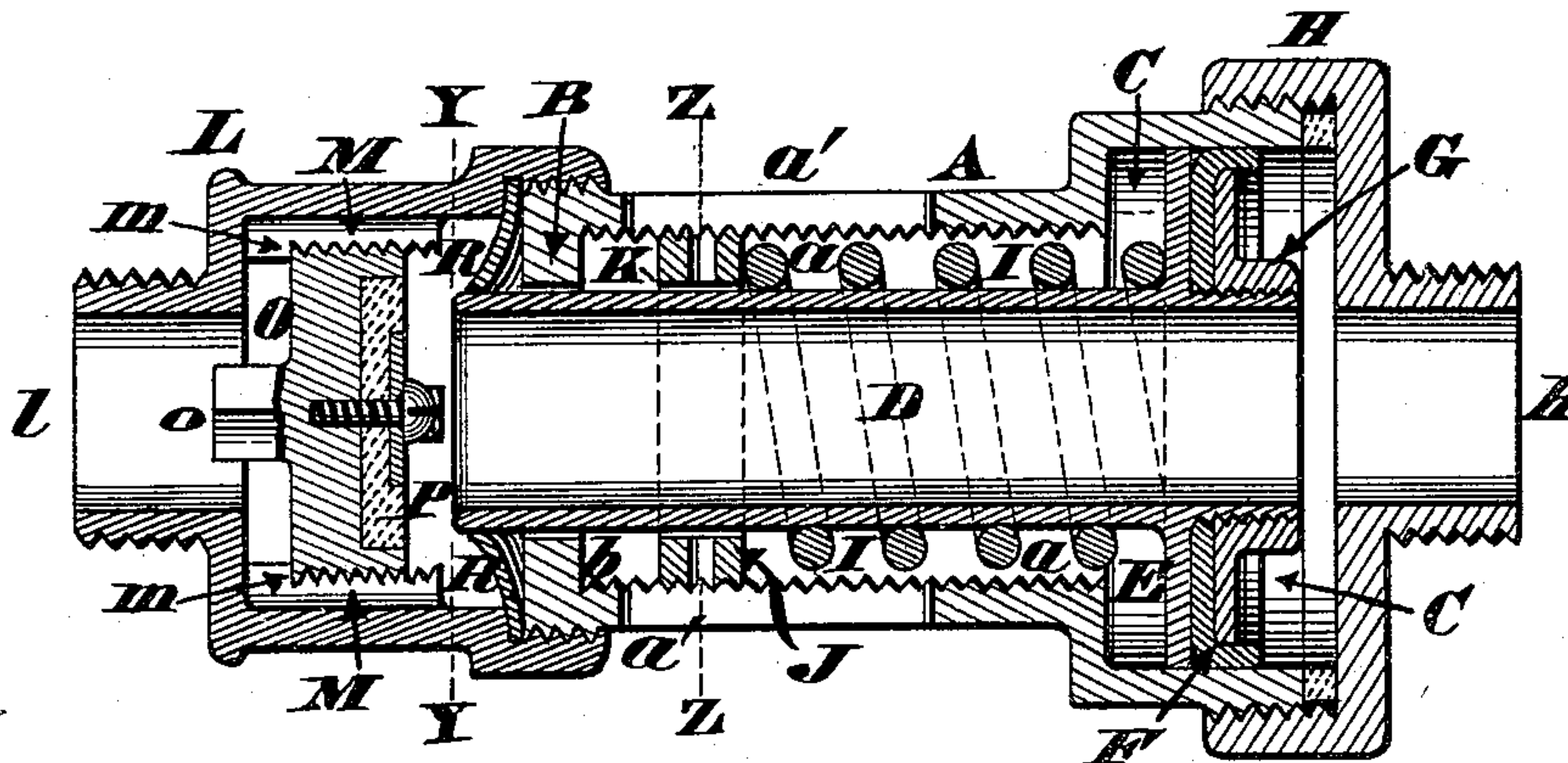


FIG. 3.

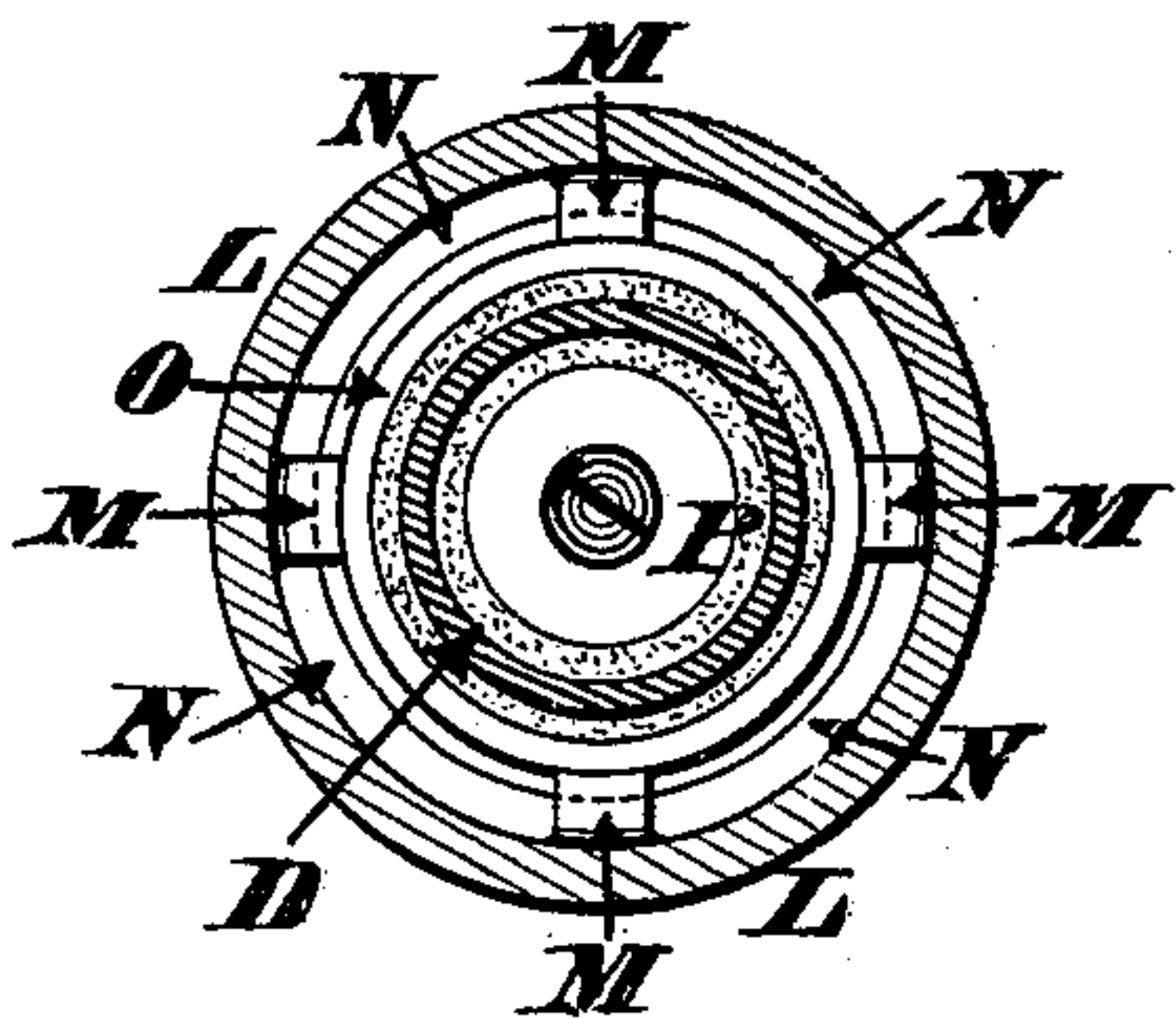
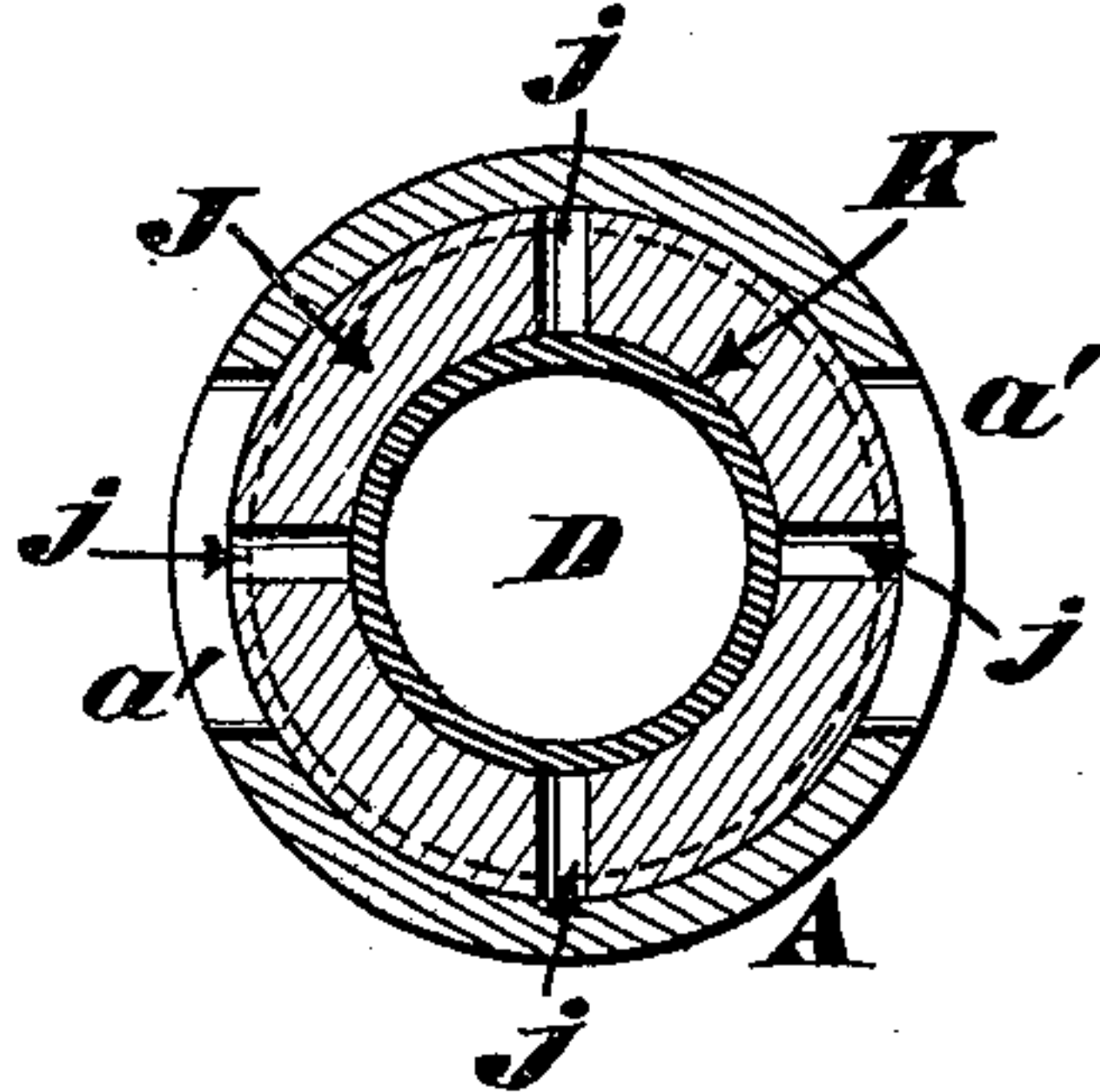


FIG. 4.



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UNITED STATES PATENT OFFICE.

ALFRED E. BURNETT, JR., OF CINCINNATI, OHIO.

FLUID-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 614,441, dated November 22, 1898.

Application filed May 4, 1898. Serial No. 679,660. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. BURNETT, Jr., a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Fluid-Pressure Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form a part of this specification.

This invention relates to those devices which are fitted between street-mains and house branches for the purpose of automatically securing a constant and uniform pressure in said branches notwithstanding frequent and sudden changes in the delivery of water therefrom; and the principal feature of my improvements comprises a novel construction and arrangement of parts that enable a ready and accurate adjustment of a moving waterway that controls the actions of the regulator, as hereinafter more fully described.

Another feature of my invention consists in constructing the regulator in such a manner as to afford a perfectly-balanced waterway, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a side elevation of my improved fluid-pressure regulator. Fig. 2 is an axial section of the regulator, the moving waterway being shifted away from its seat, so as to permit a free flow. Fig. 3 is a transverse section of the device, taken at the line Y Y of the preceding illustration, the waterway being closed against its seat. Fig. 4 is a transverse section taken at the line Z Z.

The principal member of the device is a barrel or shell A, having at one end a head B and at its other end a chamber C, of relatively greater diameter than said shell, the head being provided with a circular bore *b* to permit free play of the moving waterway D. This waterway is an accurately-turned tube having near one end an annular flange E, against which latter a cupped packing-ring F is clamped by a nut G, screwed on said tube. These devices E F G constitute a piston that travels, water-tight, within the chamber C as the tube D moves back and forth, said chamber being closed by a cap H, provided with an outlet connection *h*.

The waterway D is maintained in its normal or open position by a coiled spring I, that bears against the flange E, and a tension-regulating nut J, the latter being provided with a circular bore K for the passage of said tube D. Furthermore, this nut has a number of radial openings *j* for the reception of a lever or pin for turning said nut either to the right or left, its periphery being properly threaded to engage with a female screw *a*, chased within the shell A. *a' a'* are longitudinal slots in said shell to afford access to said nut.

Attached to the smaller end of shell A is a cap L, having an inlet connection *l* and a number of longitudinal ribs M, the inner surfaces of these ribs being screw-threaded and provided with shoulders *m*, annular channels N being left between these ribs, as seen in Fig. 3, and the united areas of said channels being equal to that of the waterway D. Screwed into this cap until it bears against the shoulders *m* is a solid plug O, having on one side a seat P and on its other side a square shank *o* for the reception of a socket-wrench.

R is a packing-ring clamped between the head B *b* and cap L for the purpose of preventing any escape of water around the tube D.

After my regulator has been properly fitted together the capstan-nut J is turned, either to the right or left, so as to advance or retract it within the shell A until the desired tension is imparted to the spring I, which tension will force the tube D away from the seat P and carry the piston E F G of said tube toward the cap H, as seen in Fig. 2. The inlet *l* is then screwed to a pipe communicating with a street-main, while the outlet *h* of the regulator is connected to a pipe attached to a house branch, the device being placed horizontally or vertically or at any suitable inclination, if desired. When the water is let on, it flows through the inlet *l*, then traverses the annular channels N, and thus gains access to the tube D. The water next escapes through the outlet *h*, enters the house branch, and flows regularly as long as a normal pressure is maintained; but when for any reason an abnormal pressure accumulates in the house branch the water bears against the capped side of piston E F G, and as the area of the latter is considerably greater than that

of the tube D the result is to shift said tube until it seats against its bearing P, and thus automatically stops the flow of water for the time being; but as soon as the pressure in the house branch again becomes normal the spring I opens the waterway D and the flow of water is restored.

By referring to Fig. 3 it will be apparent that the tube D is surrounded on all sides by the water entering through the annular inlets N. Consequently said tube is perfectly balanced and is ready to move forward to an open position the instant the water-pressure is removed from the piston E F G and the spring I allowed to exercise its force. Again, it will be noticed that the tube D has an uninterrupted passage through it from end to end, and not being provided with lateral ports or passages there is no danger of the packing-ring R being cut out by rubbing against the sides of such openings. Therefore the regulator will run for a long time without requiring repacking of this only wearing part of the device.

I claim as my invention—

1. A fluid-pressure regulator comprising a barrel having an enlarged chamber and outlet at one end, and provided at its other end with a detachable cap having a series of longitudinal channels communicating with a common inlet; a valve-seat arranged centrally between said channels; a reciprocating waterway housed within said barrel, and provided with a piston that traverses said enlarged chamber; and a coiled spring and adjusting-nut fitted around said waterway, in the manner described, and for the purpose stated.

2. A fluid-pressure regulator comprising a longitudinally-slotted and interiorly-threaded barrel having an outlet and enlarged chamber at one end, and provided at its other end with a detachable cap having a series of longitudinal channels communicating with a common inlet; a detachable plug fitted centrally between said channels, and furnished with a removable valve-seat; a reciprocating waterway housed within said barrel, and provided with a piston that traverses said enlarged chamber; and a coiled spring and adjusting-nut surrounding said waterway, said nut being engaged with the interior thread of said barrel, all as herein described, and for the purpose stated.

3. A fluid-pressure regulator comprising the barrel A, slotted longitudinally at a' , interiorly threaded at a , and provided at one end with a chamber C, cap H, and outlet h ; and having at its other end a cap L having an inlet l , and screw-threaded ribs M, with channels N, between them; a plug O engaged with said ribs, and provided with a seat P, a waterway D moving within said barrel and provided with a piston E F G, traversing said chamber C, a spring I coiled around said waterway, so as to force it away from said seat P, a capstan-nut J engaged with said thread a of the barrel, and a packing-ring R surrounding said waterway all as herein described.

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

ALFRED E. BURNETT, JR.

Witnesses:

JAMES H. LAYMAN,
HARRY W. BRUKE.