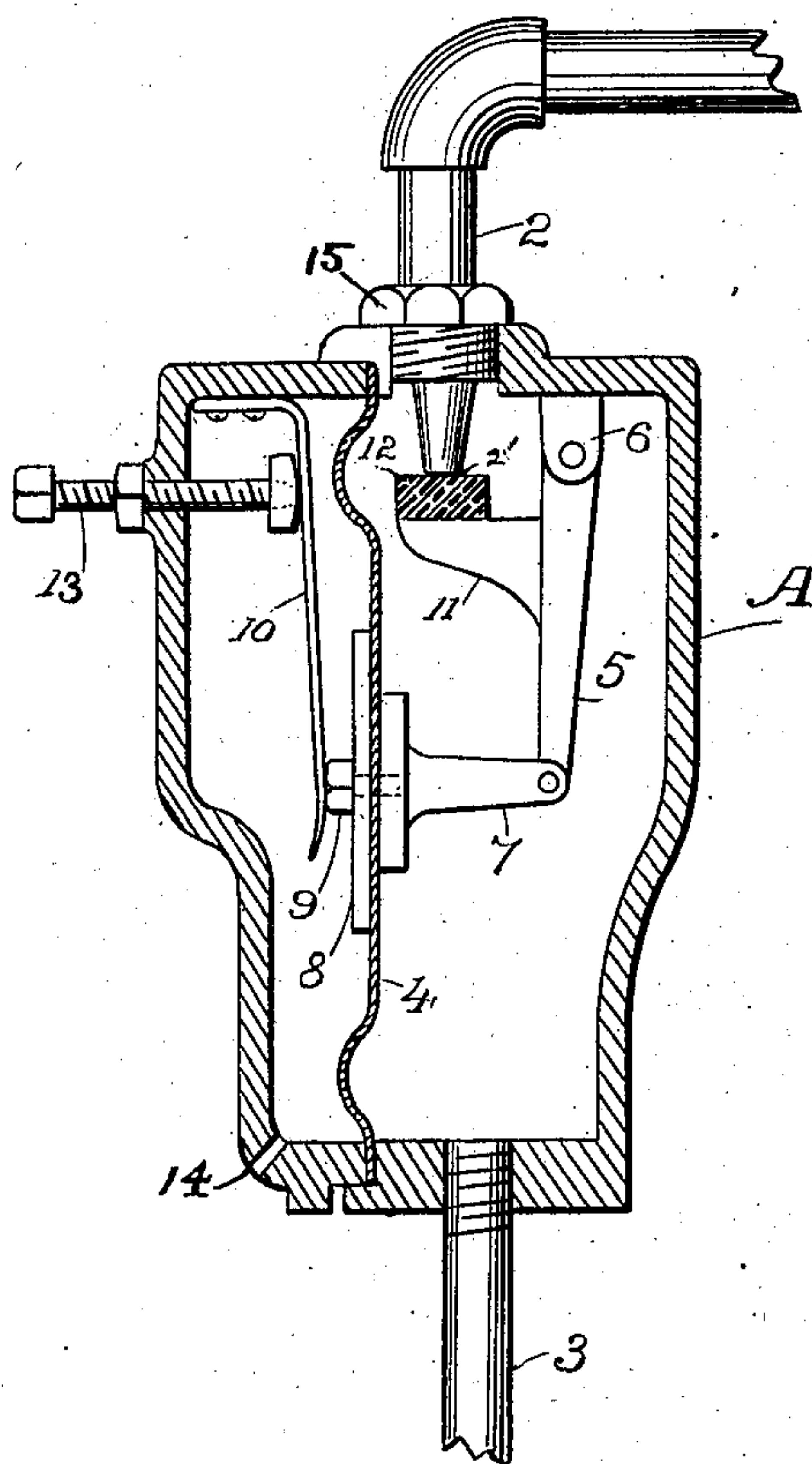


No. 744,679.

PATENTED NOV. 17, 1903.

E. R. COOK.  
GAS REGULATOR.  
APPLICATION FILED NOV. 6, 1900.

NO MODEL.



Witnesses,  
*J. H. Morse*  
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Inventor,  
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By *Dewey Strong & Co.*  
*Allen*



# UNITED STATES PATENT OFFICE.

EDMOND R. COOK, OF SACRAMENTO, CALIFORNIA, ASSIGNOR OF ONE-HALF  
TO GEORGE F. HEUSNER, OF PORTLAND, OREGON.

## GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 744,679, dated November 17, 1903.

Application filed November 6, 1900. Serial No. 35,638. (No model.)

*To all whom it may concern:*

Be it known that I, EDMOND R. COOK, a citizen of the United States, residing at Sacramento, county of Sacramento, State of California, have invented an Improvement in Gas-Regulators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in devices by which the supply of gas to the burners is regulated or governed irrespective of variation or sudden fluctuations in the pressure. I have particularly designed my apparatus for use upon locomotives in connection with a source of supply, as an acetylene-gas generator, and where it is necessary to insure a steady pressure, as in the burners of headlights, &c.

The primary object of my invention is to provide a gas-regulator which will be rendered extremely sensitive by reducing to a minimum the friction between moving parts, thereby insuring a steady pressure of gas at the burner.

My invention, generally described, consists in a casing in which is located a flexible partition or diaphragm with which communicates an inlet-passage, the conduit of such passage extending within the casing, an outlet-passage leading from the casing, a pivotal lever within the casing, a valve rigidly supported upon said lever and laterally projecting therefrom at a point intermediate of its ends and adapted to engage the inwardly-projecting portion of the conduit, and thereby control the admission of the gas to the casing, a leaf-spring rigidly secured at one end to the inner surface of the top wall of the casing and engaging at its lower end the diaphragm at a point on the opposite side thereof from the valve, and means for adjusting the tension of said spring, and thereby regulating the pressure of gas in the casing.

My invention will be more fully described hereinafter with reference to the accompanying drawings, in which the same is illustrated, the single figure showing the regulator in vertical section.

A represents a suitable casing having an inlet-tube 2, communicating with and projecting into the interior of said casing, and

an outlet-tube 3. The interior of the casing is divided vertically into two compartments by a flexible diaphragm 4. Both outlet and inlet tubes open into the same compartment. As there is no perceptible jar or irregularity of motion in the line of travel of the locomotive, I fix the regulator with its diaphragm 4 transverse to the line of travel, so that the side and vertical movements will have little or no effect upon it. A lever 5 is fulcrumed near the top of one compartment, as at 6, and the lower end of the lever is pivoted to the horizontal stem 7, which is connected through the diaphragm with the compression-plate 8 by the nut 9. Depending within the other compartment and bearing upon the nut 9 on the compression-plate 8 is the spring 10, rigidly secured at its upper end to the inner surface of the top wall of the casing A. The lever 5 has an arm 11 projecting laterally from a point intermediate of its ends, upon which is a rubber compression-valve 12, which controls the inlet-opening. Thus any increase of pressure which would press the diaphragm outward would act, through the lever, to close the valve, while, conversely, a reduction in pressure on the diaphragm or an increased pressure in the inlet-pipe would allow it to open. The spring 10 counteracts the opposing pressure of gas on the other side of the diaphragm, and its tension is adjusted by the set-screw 13.

The effect of many gases, and particularly acetylene gas and its products, is such as to cause metal valves to stick to their seats. This is avoided, as in the case of the valve 12, by the use of rubber, above mentioned. While, as I have stated, this regulator is intended, primarily, to overcome the transverse and vertical movements of a locomotive and the consequent commotion and wash of the water in the generator, it is equally applicable for like positions when there is considerable swaying and movement and may be used as a governor under the most ordinary circumstances.

From the foregoing description it will be observed that I have invented a gas-regulator which is rendered extremely sensitive, and thereby capable of maintaining a constant pressure of gas by reason of the reduction of friction between moving parts to a mini-



num—that is, the only friction occurring during the seating and unseating of the valve is at the pivotal points at the opposite ends of the lever 5 and at the point where the spring 10 engages the nut 9.

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

In a fluid-pressure regulator, the combination with a casing, of a diaphragm supported within said casing, an inlet-pipe communicating with and projecting into the interior of said casing, an outlet-pipe leading from said casing, a lever pivotally supported within said casing and depending from a point adjacent to said inlet-pipe, a valve rigidly supported upon said lever and projecting laterally therefrom at a point intermediate of its ends and extending beneath the projecting end of said inlet-pipe, a post rigidly connected to said diaphragm and pivotally con-

nected to the lower end of said lever, a leaf-spring located within said casing on the opposite side of the diaphragm from the valve, said spring being rigidly secured at its upper end to the inner surface of the casing and at its lower end pressing against the diaphragm and thereby tending to move the valve out of engagement with said projecting end of the inlet-pipe, and a set-screw passing through and adjustably supported in the casing and engaging the leaf-spring near its fixed end whereby the tension of the latter may be adjusted and the pressure of gas in the regulator thereby determined.

In witness whereof I have hereunto set my hand.

EDMOND R. COOK.

Witnesses:

GEO. F. HEUSNER,  
CHAS. H. CAREY.