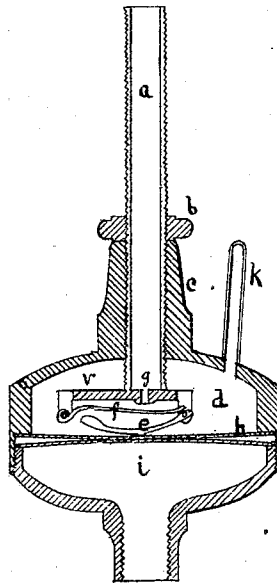
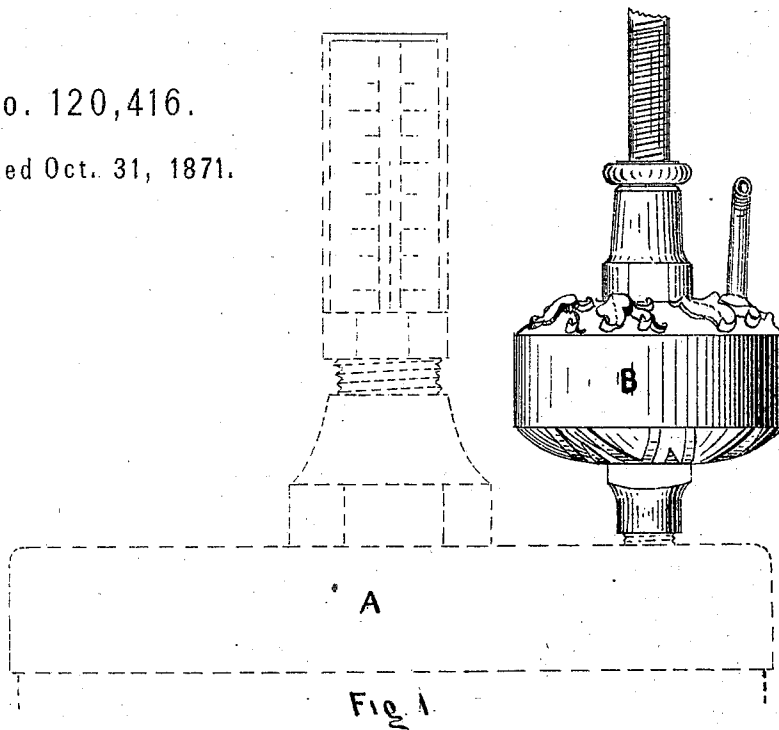


Coolidge's Gas Regulator

No. 120,416.

Patented Oct. 31, 1871.



Witnesses

Robert M. Kerr
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Inventor

John B. Coolidge

UNITED STATES PATENT OFFICE.

JOHN B. COOLIDGE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN GAS-REGULATORS.

Specification forming part of Letters Patent No. 120,416, dated October 31, 1871; antedated October 14, 1871.

To all whom it may concern:

Be it known that I, JOHN B. COOLIDGE, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Gas-Regulator, used especially in vulcanizing India rubber for dental purposes, of which the following is a specification:

This invention relates to a regulator of illuminating-gas feeding the burner under a boiler or vulcanizer used for the vulcanization of India rubber or other gums used for dental purposes. It consists of a metallic device, containing two separate chambers, the one above the other, and the chambers are joined by the upper being screwed upon the lower, and the device itself is screwed upon the top of the boiler or oven. The lower chamber is screwed upon the nipple or connecting-pipe upon the top of the boiler or vulcanizer, and is opened into the boiler through the connecting-pipe. The chamber is made of brass with a thin sheet-copper top, easily expanded upward when the pressure of heat in the boiler becomes intense. Upon this copper top is placed a steel spring in the form of a disk or plate, covering the top of the lower chamber or its central portion. This steel spring-plate rests against a shoulder within the upper chamber. Into the upper chamber, at its center, descends an adjustable tube, through a connecting-pipe, having a valve-seat, to which is joined at one end a hinged valve and at the other end a hinged lever, the lever lapping upon and moving the valve. This tube has an orifice at its lower end open, except when closed by the valve operated by the pressure from below. There is also another pipe leading from the upper chamber, through which flows the gas feeding the burner. The object of the device thus explained, of course, is to regulate the amount of gas flowing to the burner and thus regulate the temperature in the boiler or vulcanizer, since steady temperature at a certain degree of heat is indispensable in the production of good work; and when this desired temperature is reached the steady flow of gas is regulated at that point, and the device may be left to do its work without watching the time necessary to vulcanize the dental work.

Figure 1 represents in the dotted lines the top of the vulcanizer or boiler with its thermometer, and also the gas-regulator, in perspective. Fig. 2 represents a vertical section of the regulator,

showing the exact arrangement of all the parts of the device when screwed upon the vulcanizer.

A represents the vulcanizer; B, the gas-regulator; *a*, the in-flowing tube descending into the upper chamber; *b*, a screw-nut; *c*, the connecting-pipe of the upper chamber; *d*, the upper chamber; *v*, the valve-seat on the end of the tube *a* with the hinged valve *f* and the hinged lever *e* connected therewith; *g*, the vent of the tube *a*; *h*, the steel spring-plate; *i*, the lower chamber; and *k* the escape-pipe. The accompanying drawing gives a clear view of the regulator, Fig. 1, as it is connected with the vulcanizer, and Fig. 2 the exact arrangement of its several parts. *a* is the tube through which flows the gas from the gas-reservoir into the gas or upper chamber; it is movable up and down, as may be necessary with respect to the steel spring-plate *h*. Upon its lower end is a valve-seat, *v*, to one end of which is hinged the valve *f*, and to the other end the lever *e*; and *g* is a small orifice, through which the gas flows to the burner under the boiler or vulcanizer, and *i* is a chamber made of metal, the top of which is flexible copper or any suitable metal, firmly brazed to the top of the rim or wall of the chamber.

The operation of the device may be explained as follows: Screw the regulator to the vulcanizer, connect the tube *a* by a flexible tube or otherwise to the gas-reservoir, and let in the gas; it fills the chamber *d* and flows out the tube *k*, which connects with the burner under the boiler or vulcanizer. When the vulcanizer becomes heated the chamber *i*, opening into the vulcanizer, becomes heated, of course, and the pressure of heat causes its copper top to expand or swell upward; this in turn pushes up the steel spring-plate *h* against the lever *e*, and the lever *e* pushes the valve *f* up, covering the orifice *g*, thus cutting off more or less the flow of gas. That the gas may not be cut off entirely a small orifice may be made in the valve *f* or in the tube *a*. As the flow of gas is diminished the heat of course becomes less, and when a given temperature is attained, (say from 310° to 320° Fahrenheit, or at any desirable degree,) by adjusting the movable tube *a* a uniform temperature may be maintained until the work is completed. When the tube *a* is adjusted the nut *b* holds it in place.

This device may be applied to ovens and boilers for other purposes, and is simple, inexpensive,

and effective, as has been fully demonstrated by actual tests.

I claim—

1. The combination and arrangement of the adjustable pipe *a* having a valve-seat, *v*, to which is attached the valve *f* and the lever *e*, operating so as to cut off the flow of the gas at the orifice *g*, substantially in the manner and for the purpose described.

2. The steel spring-plate *h* in its connection and arrangement with the flexible metallic top of the chamber *i*, and the lever *e* operating upon the valve *f*, substantially in the manner and for the purpose described.

JOHN B. COOLIDGE.

Witnesses:

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J. L. NEWTON.

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