J. B. COOLIDGE.

Gas Regulator.

No. 97,052. Patented Nov. 23, 1869.

FIG. 2

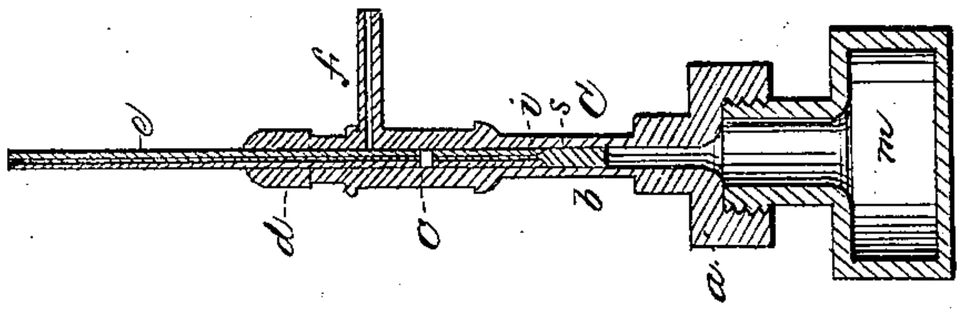
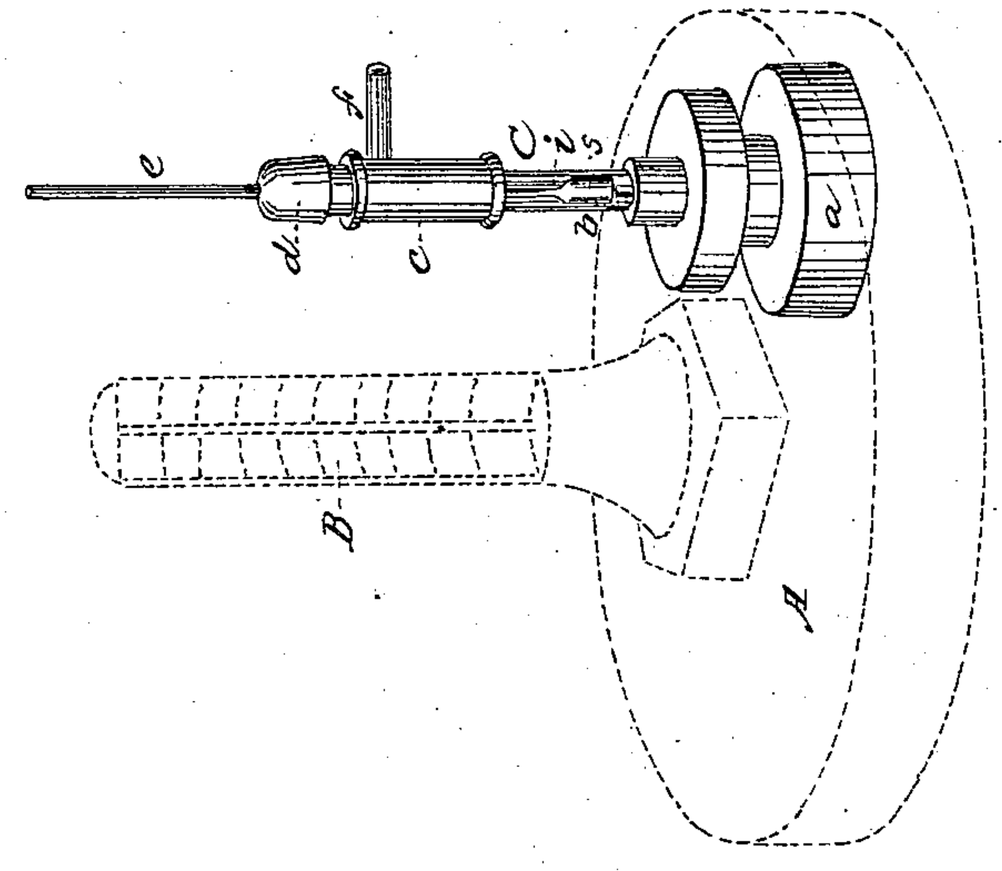


FIG. 1



WITNESSES:

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United States Patent Office.

JOHN B. COOLIDGE, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 97,052, *dated November* 23, 1869.

IMPROVED MERCURIAL REGULATOR FOR VULCANIZING AND OTHER HEATERS.

The Schedule referred to in these Letters Patent and making part of the same.

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 a new and useful Mercurial Gas-Regulator for Regulating the Heat in Vulcanizers or Ovens, &c.; and I hereby declare that the following is a full and exact description of the invention, and reference is hereby made to the accompanying drawings, and to the letters of reference, making a part of this specification.

Figure 1 is a perspective view of the mercurial gas-regulator, with dotted lines to show the top of the vulcanizer and the thermometer, &c., and

Figure 2 is a section of the regulator.

The letter A represents the cover or top of the vulcanizer;

B, the thermometer;

C, the regulator;

a, its bulb;

b, a tube connected therewith;

c, a metallic connection;

d, the packing-box;

e, adjustable inlet-tube;

f, the outlet-tube;

i, the extra vent;

s, the tip of pipe *e;* and

m, the mercury.

The nature of the invention consists in the use of a device, consisting of a bulb and tube, containing mercury, set in the top, or any convenient place, of an oven or vulcanizer, the bulb being within the oven or vulcanizer, under which is placed a gas-burner, fed by gas flowing into and out of a tube connected with the burner.

The gas-burner heats the oven or vulcanizer, and, at the same time, heats the bulb of the regulator, causing the mercury to rise, by expansion, in the tube, toward the cut-off or end of the inlet-tube.

The heat of the oven or vulcanizer also causes the mercury to rise in the thermometer, the bulb of which is placed within the top of the oven or vulcanizer.

When the thermometer indicates 310° Fahrenheit, or any required degree of heat, an adjustable inlet-tube is brought down to the mercury, which diminishes the amount of gas flowing to the burner, but the flame does not go out, being fed from an extra vent in the inlet-pipe; and thus the heat very soon settles at the required degree, and will remain there steadily and evenly as long as required.

The use of the invention is to regulate the heat used in vulcanizing rubber, or other elastic gum, used in dentistry for forming the palate and gums, or other parts, in which teeth are set, or with which teeth are connected; also, to regulate the heat of ovens or chambers, where uniform heat is required, as in regulating watches, &c.; also, in testing the thermometer connected with the oven or vulcanizer.

The description of the device is as follows:

The letter A represents the top of a vulcanizer, made of metal, or other suitable material.

B is the thermometer, the bulb of which is within the oven.

a is the bulb of the regulator, extending into the oven or vulcanizer, containing the mercury.

To the bulb, extended, is fastened a tube, *b*, having a metallic top, upon which is screwed the connecting-piece *c*, and to this connecting-piece is screwed the packing-box *d*.

Through *d c*, into the tube *b*, passes the inlet-pipe *e*, having an iron, glass, or porcelain tip, *s*, in which, also, is the extra vent *i*.

The inlet-pipe *e* is connected with illuminating-gas, which flows through the pipe into the tube *b*, and, meeting the mercury, rises and flows through the outlet-pipe *f* to the burner connected with the other end of the same.

To use the device, place the material within the vulcanizer, the same being over the burner, and turn on the gas. It flows to the burner, as above described. The heat will soon cause the mercury to rise in the thermometer and regulator. When the thermometer indicates the degree required, lower the adjustable pipe *e* till the tip *s* touches the mercury, and the heat will be regulated, so as to hold the temperature in the vulcanizer at the degree required, and as long as needed, without any care or attention.

The tube *b* may be graduated at any point, so that the adjustable pipe may be set with its cut-off at any degree, and in this way the tube, graduated, will become a test for the accuracy of the thermometer.

Vulcanizing dental rubber requires close attention, as a slight increase of heat will affect the material to be vulcanized, and hence dental rubber is often brittle, and its value impaired.

The same principle and device will apply to ovens, where uniform heat is required.

The device, and the application of mercury for this purpose, is novel, and of great practical utility.

I claim—

1. The application of the expansion of mercury to regulate the heat in vulcanizing rubber, or its equivalent, for dental purposes, substantially as shown.

2. The use of mercury, by expansion, to regulate the heat of ovens, where uniformity of heat is required, in combination with the device C, constructed substantially as shown, and for the purpose specified.

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Witnesses:

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J. L. NEWTON.