(No Model.)

C. F. SCATTERGOOD.

AUTOMATIC REGULATOR FOR DENTISTS' VULCANIZING APPARATUS.

No. 343,255. Patented June 8, 1886.

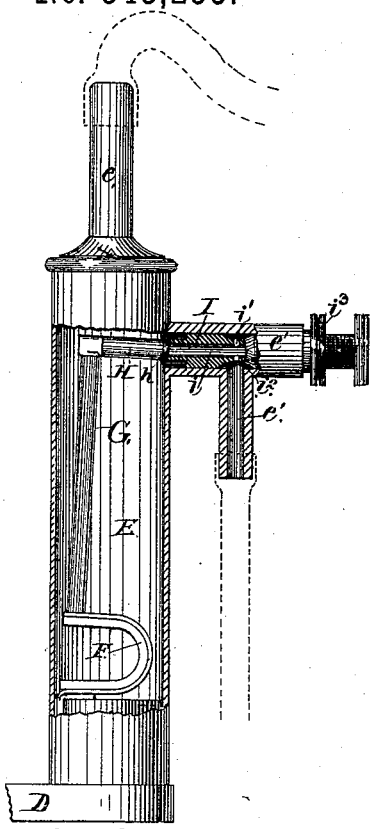


Fig. 2.

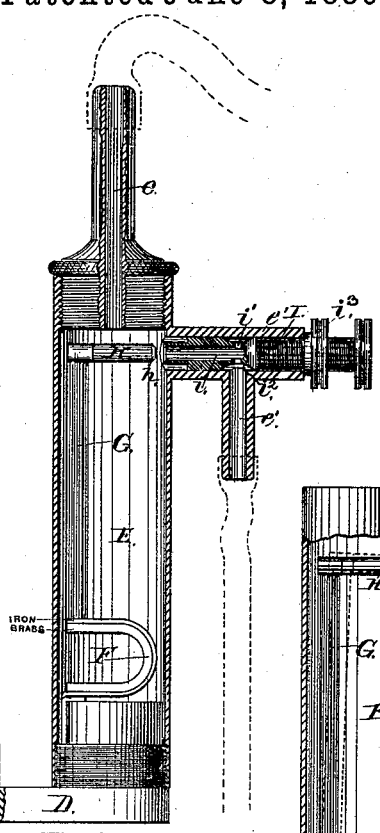
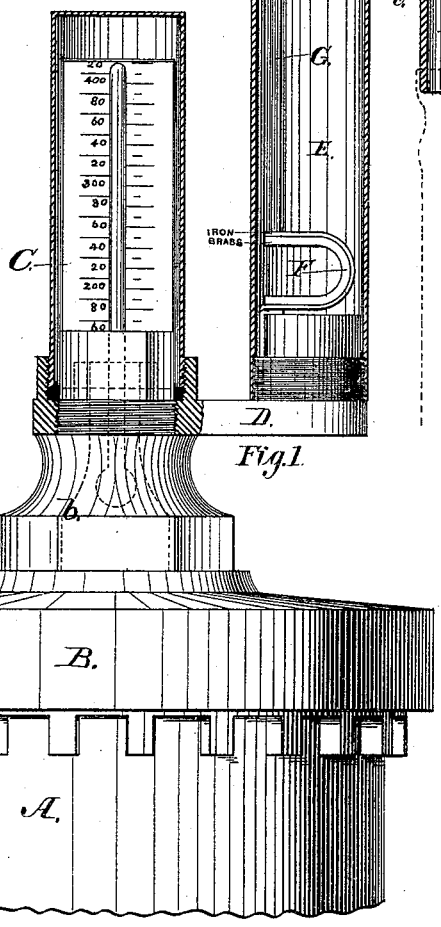


Fig. 1.



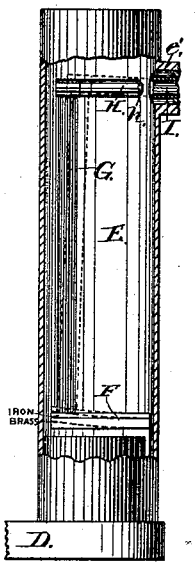


Fig. 3.

Witnesses:

J. B. Brewer,

Fred B. Hubbard

Inventor:

C. F. Scattergood,

by William N. Low,

Attorney.

UNITED STATES PATENT OFFICE.

CHARLES F. SCATTERGOOD, OF ALBANY, NEW YORK.

AUTOMATIC REGULATOR FOR DENTISTS' VULCANIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 343,255, dated June 8, 1886.

Application filed June 30, 1885. Serial No. 170,224. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. SCATTERGOOD, of the city and county of Albany, in the State of New York, have invented a new and useful Automatic Regulator for Dentists' Vulcanizing Apparatus, of which the following is a specification.

My invention relates to a device for automatically regulating the flow of gas for generating steam in a dentist's vulcanizing apparatus; and it consists of an automatic valve operated by an arm that is moved by an expanding bar formed of two metals having different expansibility under the same degree of heat.

The object of my invention is to provide a simple and reliable device that will act automatically to prevent the heat of the steam in the vulcanizer from being carried to a point where its effect on the work to be vulcanized will be injurious. This object I attain by means of the mechanism illustrated in the accompanying drawings, which, being herein referred to, form part of this specification, and in which—

Figure 1 is a vertical section of my regulator with its valve open as applied to a dentist's vulcanizer, a portion only of the latter in elevation being shown; Fig. 2, a similar section of a detached portion of my regulator with its valve closed; and Fig. 3 a modified form of the expansion-bar for operating the regulating-valve.

As represented in the drawings, A is the body of the vulcanizing apparatus, which is a vessel for generating steam, and is commonly heated by means of a gas-burner of the Bunsen type; B, the cover for said apparatus, having on its upper face a neck, *b*, in which is inserted a thermometer, C, for the purpose of indicating the temperature. An arm, D, is attached to the upper end of the neck *b*, and is provided at its outer end with a chamber, E, through which the gas flows in its course to the burner beneath the vulcanizer. Said chamber is provided with a gas-inlet, *e*, and gas-outlet *e'*, the latter being preferably located to lead from the side of the chamber E. An expansion-bar, F, composed of two plates of different metals (like brass and iron, for instance) having different ratios of expansion under heat, is attached by one end to the upper side of the outer end of the arm D inside of the chamber E. Said expansion-bar may be made in the bow-like form, as shown in Figs. 1 and 2, or straight, as shown in Fig. 3.

The arm D serves as a conductor for carrying the heat from the top of the vulcanizer to the expansion-bar F.

To the free end of the expansion-bar F is fixed a vertical rod, G, which carries a horizontal bar, H, whose outer end is made coniform to produce a conical valve face, *h*.

In the horizontal branch of the gas-outlet *e'* is inserted a screw-stem, I, having a longitudinal passage, *i*, and transverse openings *i'*, which open into a circumferential groove, *i²*, cut around the said screw-stem, so as to produce a free passage for the gas to pass through to the vertical branch of the gas-outlet *e'*. The inner end of the screw-stem I is provided with a conical valve-seat that is fitted to receive the valve-face *h* by which the passage *i* in the screw-stem I may be closed or partially closed. The said screw-stem is adjustable from the outside of the apparatus, so as to be moved endwise in the gas-outlet *e'*, so that it may be set at a point required to obtain the required steady temperature of steam in the vulcanizer, and that point being ascertained (by the aid of the thermometer C) the screw-stem I can be secured in position by means of the jam-nut *i³*, which is fitted to the screw-stem for that purpose; and it will be readily seen that by means of the screw-stem I the apparatus can be readily adjusted from the exterior, so as to maintain any required degree of heat in the vulcanizer without taking said apparatus apart and while it is performing its usual functions.

A removable cylindrical cap, J, is fitted to cover the thermometer C, so as to protect the latter from injury.

The operation of my apparatus is as follows: The gas-inlet *e* being connected to the gas-supply and the gas-outlet *e'* being connected to the burner fixed under the vulcanizer, the valve *h* being in its normal position, as shown in Fig. 1, the gas issuing from the burner under the vulcanizer is lighted, so as to generate steam in the vulcanizer. The gas will at first pass through the regulator to its full capacity until steam is generated. Then the heat from

the steam is conducted through the arm D to the expansion-bar F, and the superior expansion of the most expansible metal of said bar throws the latter out of its normal shape, and so long as the expansion of said bar continues to increase the valve *h* will be moved closer and closer toward the passage *i* until the flow of gas through the outlet *e'* has been reduced to the point required to maintain the steam at the required temperature. When the gas supply is shut off, and the apparatus becomes cooled down, the metals forming the expansion-bar F will become contracted until said bar is restored to its normal shape, the valve *h* will be drawn back, and the parts will be in condition for a repetition of the operation described.

I claim as my invention—

1. A gas-regulator composed of the following parts: a heat-conductor to which is attached an expansion-bar composed of metals of different expansibilities and carrying a valve for regulating the flow of gas, and a gas-chamber provided with a gas-inlet and gas-outlet and an adjustable hollow stem, with which the automatic gas-regulating valve co-operates in the manner and for the purpose herein specified.

2. In a gas-regulator for a vulcanizing apparatus, a heat-conductor, D, having a gas-chamber, E, provided with gas-inlet *e* and gas-outlet *e'*, the latter having an adjustable hollow stem, I, and an expansion-bar, F, composed of two metals of different expansibilities, to which a valve, *h*, is attached, and is adapted to govern the opening through the gas-outlet *e'*, as and for the purpose specified.

3. In a gas-regulator, the combination, with an automatic valve operated by an expansion-bar, of an adjustable hollow stem or tube extending through the casing of the gas-chamber and forming a seat for said valve, substantially as described.

CHAS. F. SCATTERGOOD.

Witnesses:
H. V. SCATTERGOOD,
WM. H. LOW.