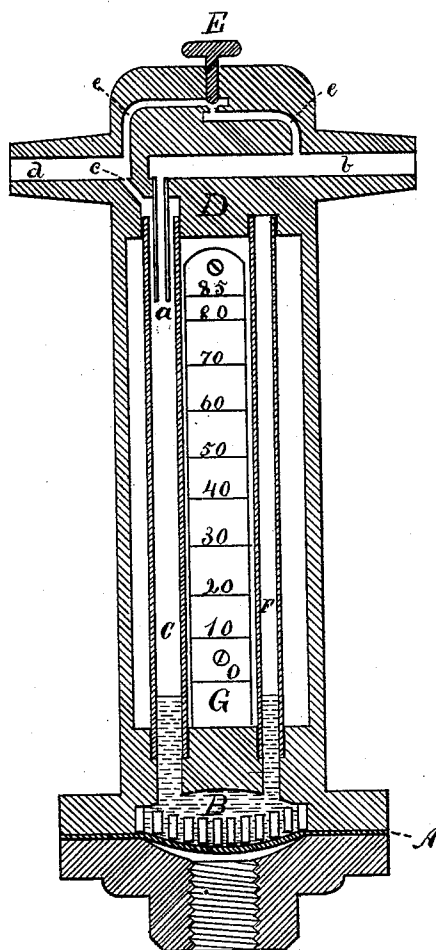


G. M. HOPKINS.
Gas-Regulators for Vulcanizers.

No. 151,779.

Patented June 9, 1874.



Witnesses;
G. S. Allis.
J. H. Hopkins

Inventor;
Geo. M. Hopkins.

UNITED STATES PATENT OFFICE.

GEORGE M. HOPKINS, OF ALBION, NEW YORK.

IMPROVEMENT IN GAS-REGULATORS FOR VULCANIZERS.

Specification forming part of Letters Patent No. **151,779**, dated June 9, 1874; application filed October 31, 1873.

To all whom it may concern:

Be it known that I, GEORGE M. HOPKINS, of Albion, in the county of Orleans and State of New York, have invented a Gas-Regulator and Pressure-Indicator for Vulcanizers and other purposes, of which the following is a specification:

The object of my invention is to control the supply of gas which is consumed in the process of vulcanizing, or wherever a continuous even pressure or temperature are to be maintained by means of gas as fuel, and also to indicate the pressure. To accomplish these objects I use two columns of mercury which are actuated by a diaphragm which is acted upon by the steam-pressure. One of these columns of mercury controls the supply of gas while the other indicates the pressure.

The accompanying drawing is a vertical section.

A is a diaphragm constructed in any suitable manner and supported in the ordinary way. B is a chamber above the diaphragm which is filled with mercury. C is a tube which connects with the chamber B and extends upward and into the casting D. *a* is a small tube which is screwed into the casting D, extending downward into the tube C to the point at which it is desired to cut off the gas, and forming a continuation of the passage *b*. *c* is a passage connecting the passage *d* with the tube C. *ee* is a passage connecting the passages *d* and *b*. E is a screw-valve which controls the flow of gas through the passage *ee*. F is a glass tube which connects with the chamber B, and is left open at the top. This tube is intended to indicate the pressure as the tube C becomes blackened by the inflow of gas. G is a graduated scale which is placed between the tubes C and F, with which the mercury in the tube F is compared.

The regulator being connected with the vulcanizer, so that pressure is exerted on the under side of the diaphragm A, and the gas-supply being connected with the passage *b*, and the passage *d* being connected with the burner

under the vulcanizer, and the screw E being adjusted so that only enough gas passes by it to keep the flame alive, and not enough to increase the pressure, it will be evident, as the remaining portion of gas which is necessary to maintain the pressure must pass down the tube *a*, that when the steam-pressure on the diaphragm is sufficient to force the mercury up until it comes in contact with or very near the end of the tube *a*, the supply of gas will be just sufficient to maintain the required pressure.

The regulator described has its main portion formed of a single casting adapted to hold the other parts, the whole being a compact unit well adapted for safe transportation and convenient application to the vulcanizer.

I am aware that pressure-gages with a diaphragm and a single mercurial column are not new. I am also aware that the expansion of mercury by heat has been used to control the flow of gas by forcing a column of mercury against a gas-tube. Therefore, I do not claim these; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The casting provided with the independent passage *e* and the valve E adapted to control the passage for the purpose of regulating the height of the permanent flame, substantially as described.

2. In a regulator provided with a mercury-chamber, the two independent tubes C F connected therewith, one being adapted to regulate the flow of gas and the other to indicate the pressure, substantially as described.

3. The casting described, provided with the passages *b c d e* and mercury-chamber B, in combination with the tubes *a C F* and the threaded base-piece for securing the diaphragm in place.

GEO. M. HOPKINS.

Witnesses:

G. S. ALLIS,
H. M. HOPKINS.