(No Model.)

C. G. FREEMAN.

GAS MIXER.

No. 509,369. Patented Nov. 28, 1893.

Fig. 1.

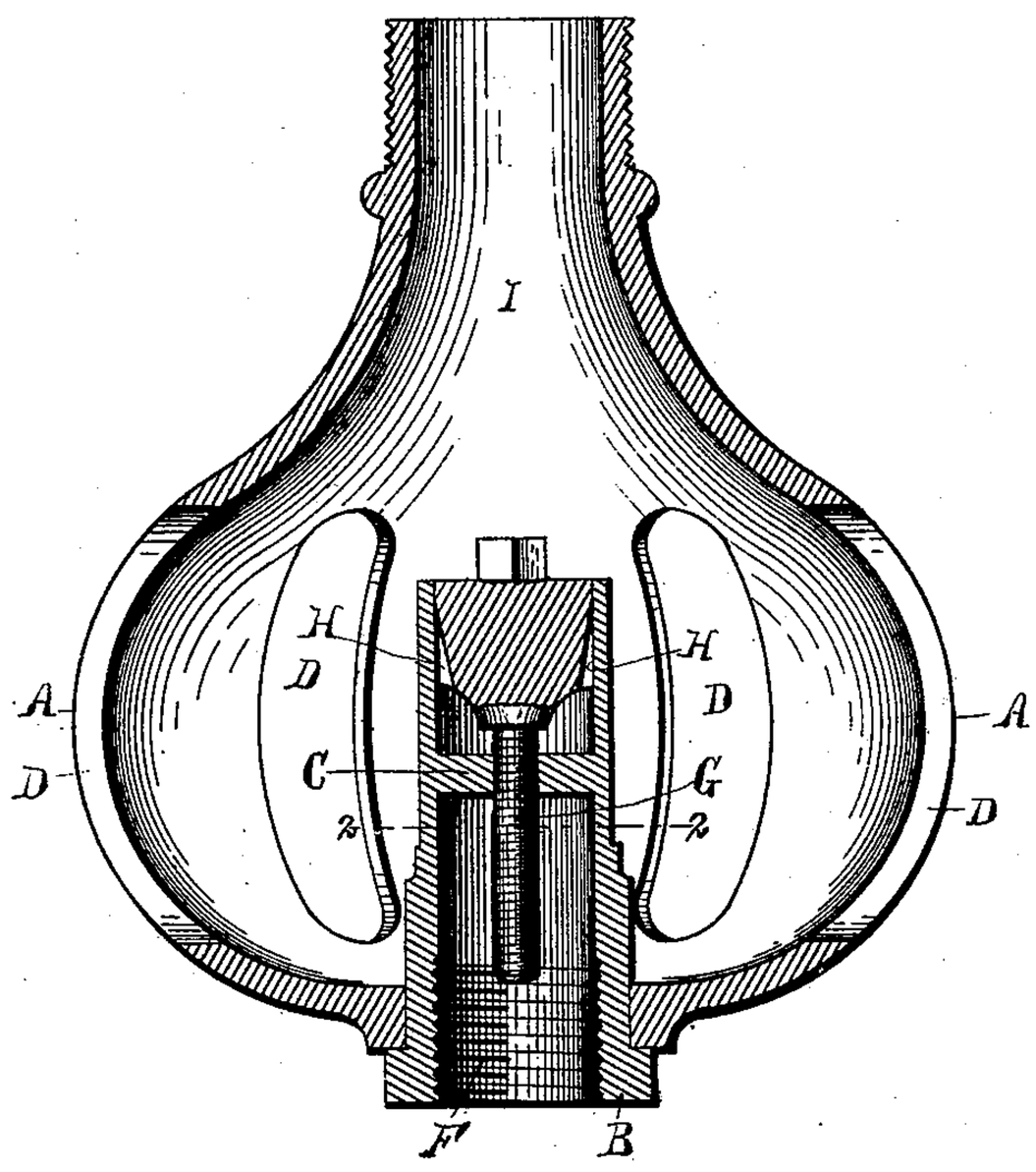


Fig. 3.

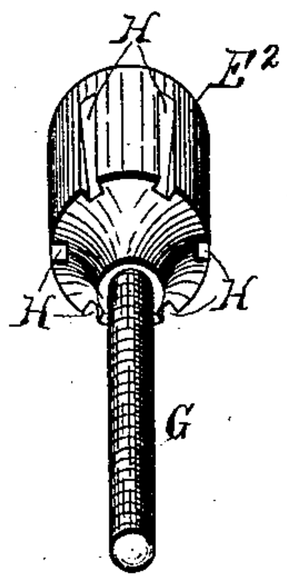


Fig. 2.

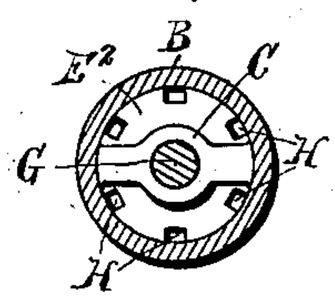
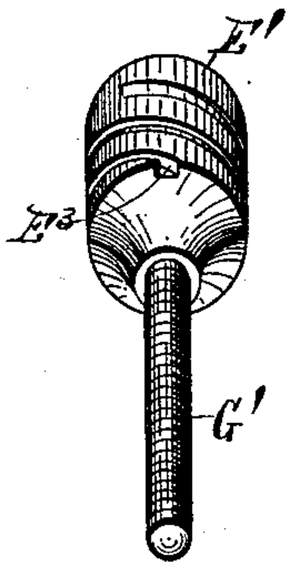


Fig. 4.



WITNESSES:
A. N. Seng
H. C. Dyson

INVENTOR
Claudius G. Freeman
BY F. A. Gibbs
ATTORNEY

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CLAUDIUS G. FREEMAN, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO WILLIAM H. MATLACK, OF SAME PLACE.

GAS-MIXER.

SPECIFICATION forming part of Letters Patent No. 509,369, dated November 28, 1893.

Application filed July 3, 1893. Serial No. 479,463. (No model.)

To all whom it may concern:

Be it known that I, CLAUDIUS G. FREEMAN, of Louisville, in the county of Jefferson and State of Kentucky, have invented new and useful Improvements in Gas-Mixers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The object of this invention is to provide a gas mixer for use with natural gas burners whereby a mixer will be produced which may be readily adapted to the varying conditions of pressure from the mains, and which will be absolutely reliable at all times, with no loss of time in practical operation. To that end I have produced the device shown in the annexed drawings, in which—

Figure 1 is a longitudinal vertical section taken through the mixing chamber —A— and the regulator of the device. Fig. 2 is a horizontal sectional view, inverted, taken on line —2—2— of Fig. 1. Fig. 3 is an isometric perspective of the regulating-valve, and Fig. 4 is a similar view of a modified form of the same.

In the annexed drawings similar letters of reference denote corresponding parts in all views.

In gas-mixers as usually constructed there are openings of an arbitrary size leading from the supply pipes to the mixing chamber, which, if the gas pressure be too high may be too large to expose the proper amount of gas area, in which case the exposed gas area cannot be reduced. On the other hand if the gas area prove too small because of lower pressure the openings must be reamed out to increase the flow, in which case the amount of reaming becomes frequently merely unreliable guess work.

In the drawings —A— is a mixing chamber which is my preferred style of construction, though its form may be altered, without departing from the spirit of my invention. It is essential, however, that the upper portion in the general shape of an inverted funnel be retained in the same general form, as that is the portion of the chamber in which the admixture of atmospheric air and fuel-gas is accomplished, where the device is to be used for heating purposes, as this is intended to be used.

B— is the gas-cylinder across the interior of which is the bridge —C— which is provided with an internally screw-threaded opening for receiving the screw-threaded end of the graduated and adjustable valve —E^2—, which valve is intended to control the supply of natural-gas to be admitted into the mixing chamber —A—.

The chamber —A— is provided with openings —D— which are intended to permit entrance of external air into the interior of said chamber to permit admixture of the same with the natural gas passed through the valve —E^2—. The upper end of the valve —E^2— ternates in a square head —*a*— which is provided so as to permit of properly placing thereon an ordinary key to screw up or down the said valve in its seat thus furnishing ready means of adjusting said valve to compensate for any degree of pressure as found in the various localities in which natural gas is used as fuel and admit into the mixer-chamber the proper proportion of atmospheric air and natural gas to secure perfect combustion.

The circumferential face of the valve —E^2— is provided with a series of graduated grooves —H— which are of sufficient depth at their base—or lower end—and terminate at zero at their upper ends, thus securing a wide range of exposed gas areas to meet the demand incident to the varying gas pressures commonly found.

In Fig. 4 is shown a style of valve which is meant to take the place of the one of Fig. 3 if it is desired, and in this instance the grooves are cut spirally into and around the face of the valve —E^2— though otherwise the operation is the same.

The general pear-shaped mixing chamber is the most desirable form of mixer where it is provided as shown with a sufficient number of openings for the admission of external air, as this form of construction permits it being readily placed upon and removed from the supply pipe —B—, and in addition to that it has been found in practice that back-flashes from the burner will be less dangerous or liable to cause ignition of the gas within such

pear-shaped chamber, as is sometimes common to other mixers in general use with natural gas where used for fuel.

The operation of my device is as follows: The parts being assembled as shown in the general sectional view—Fig. 1—and the burner attached to the screw-threaded upper end the natural gas is admitted to the portion —B— from whence it flows through the openings —H— in the valve —E^2— into the chamber —A— where it becomes mixed with the atmospheric air admitted into said chamber through the openings —D—, the pressure of gas carrying the air up into the funnel shaped portion —I— where the admixture takes place preparatory to passing to the burner where it is consumed. In case the pressure is not sufficiently great the key is applied to the squared head —*a*— and the valve —E^2— and its stem —G— are raised thus bringing the graduated grooves —H— higher and permitting a greater quantity of gas to pass into the mixer. In case the pressure is excessive the valve is lowered so as to bring the smaller portion of the graduated grooves into coincidence with the upper portion of the gas cylinder —B— and lessen the supply.

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

1. In a device of the described class, a gas-cylinder, a screw-threaded cross-bridge therein, a graduated valve seated adjustably in said bridge at one end and provided near its opposite end with a series of graduated gas channels or passages, all substantially as specified.

2. In a device of the described class, a pear-shaped mixing chamber, a gas-cylinder, a screw-threaded bridge therein, a check-valve within said gas-cylinder, a screw-threaded depending stem integral with said valve fitting in said bridge, graduated channels in the circumferential face of said valve and a key-seat at the upper end of said valve, all in combination, substantially as specified.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Louisville, in the county of Jefferson, in the State of Kentucky, this 3d day of June, 1893.

CLAUDIUS G. FREEMAN.

Witnesses:
FREDERICK H. GIBBS,
CLAUDE C. MATLACK.