

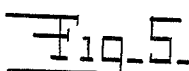
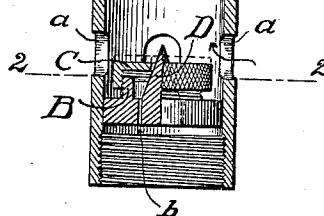
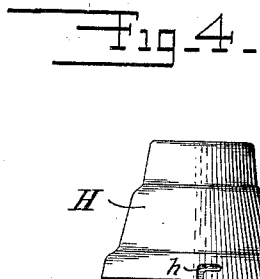
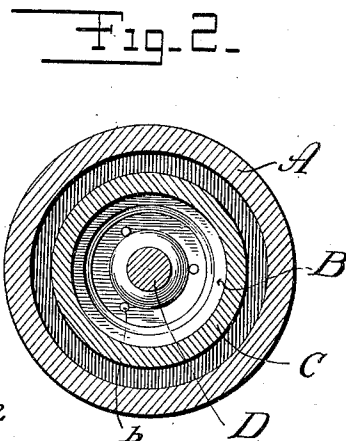
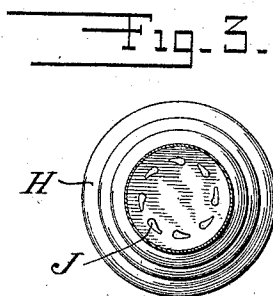
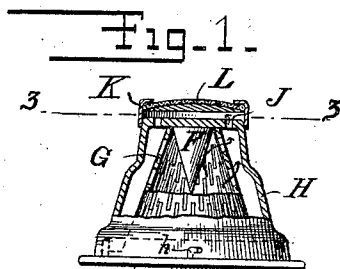
No. 744,919.

PATENTED NOV. 24, 1903.

J. HUTCHINSON.
GAS BURNER.

APPLICATION FILED MAR. 10, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH HUTCHINSON, OF NEW YORK, N. Y.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 744,919, dated November 24, 1903.

Application filed March 10, 1902. Serial No. 97,655. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HUTCHINSON, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Gas-Burners, of which the following is a full, clear, and exact description.

My invention relates to improvements in gas-burners, and particularly to that class used with incandescent mantles. Among its objects is to simplify the construction of gas-burners, so that the parts may be more economically made interchangeable, and the results obtained show good efficiency.

The invention will be found to consist in improvements in the means for the admission of gas and for the discharge of the inflammable mixture whereby the parts of the former are made readily adjustable and to coöperate to great advantage with the improvements in the latter. The mixing of the gas and air is also made more intimate and the process of combustion greatly facilitated.

In the drawings, Figure 1 is a side elevation of a structure embodying my invention, parts of the same being in section. Fig. 2 is a relatively enlarged sectional plan taken on the plane of the line 2 2 of Fig. 1. Fig. 3 is a plan and sectional view taken on the plane of the line 3 3 of Fig. 1. Fig. 4 is an elevation showing a detail of construction termed the "head-shell." Fig. 5 is a sectional elevation of the lower end of a burner-tube including a device for regulating the admission of gas, being on a relatively enlarged scale.

A is the main tube of a burner in which takes place the first mixing of the gas and air. This may be secured at its lower end to a gas pipe or fixture in a convenient manner, as by a screw-thread.

a a are air ports or inlets near the lower end of the mixing-tube, which may be provided of suitable number and dimensions.

B is a collar situated within the tube and preferably below the air-ports *a*, which is screw-threaded in the form herein shown on the outer circumference and adapted to carry

an annulus or adjusting-valve C. This valve C is situated entirely within the mixing-tube and for the purposes which will be hereinafter explained.

b b are passages for the admission of gas. The valve C coöperates in its operation with a conical valve-seat D, so that the admission of gas may be regulated thereby. It will be noted that the space E, which is formed between the valve-seat D, the collar B, and the valve C, provides a chamber wherein the gas in passing from the gas-pipe through to the mixing-tube may expand and be stored in quantities, so that an elastic regulation of the pressure of gas passing to the mixing-tube itself may take place, avoiding the disadvantages incident to inequalities of pressure which are ordinarily present in gas-mains. By moving the annulus or valve C up or down the opening formed between the inner circumference thereof and the outer surface of the valve-seat D may be varied, thus admitting through the valve under given pressure a greater or less amount of gas to the burner. This valve is entirely inclosed within the mixing-tube. It may be reached, however, for purposes of adjustment through the air-inlets *a a*, the valve being for this purpose located close thereto. No projection is provided from this valve without the mixing-tube in order that the same may not be unnecessarily interfered with and, further, that a greater range of adjustment may be had of the valve. The gas-inlet valve and the air-ports being situated, as they are, in close proximity to each other insure the proper union and mingling of the two elements within the mixing-tube.

In Fig. 1 the collar B is carried by a partition, which may be inserted within the mixing-tube. In Fig. 5 this partition is shown threaded on the outer circumference and screwed into the lower end of the mixing-tube. An extension from the partition is formed which is adapted in its turn to be screwed onto the end of a gas-pipe.

The air and gas having met at the lower end of the tube A and becoming partially mixed pass upward to what is termed the

"burner-head," where a further mixing and expansion of the same take place. Striking against the spreader F the mixture is deflected outward, passing through perforations in the strainer G, then upward inside the head-shell H, and out through the perforations J at the top. To give a more uniform distribution of the mixture at the mantle and in order that the incandescence may be more perfect, I have provided the additional cap K and gauze L. This cap I prefer to make of porcelain or some other suitable material having a low coefficient of thermal conductivity, so that the heat of the flame may be localized as much as possible. Ordinarily the excessive temperature of the burning gases causes an unsightly discoloration of the burner-tube. This non-heat-conducting cap prevents this entirely and, moreover, insures a better mixing of the gases. The cap K may be attached to the burner-head in a simple manner, as by fitting on over the outside diameter of the head-shell H. In this way an additional expansion-chamber is provided above the perforations in the head-shell.

M is a connection between the tube A and the burner-head.

In this construction I prefer to make the head-shell H separate from the rest of the burner-head and of one piece of metal, as shown in Fig. 4. That this may be readily removable it is provided at the lower edge with a slot *h*, which may cooperate with a pin in the burner-head, and thus be held in place by a bayonet-joint.

It has been customary in the trade to carry in stock complete burners of different sizes to accommodate the various requirements as to lighting power desired—as, for instance, burners adapted to cooperate with mantles of forty, eighty, and one hundred candle power. Each of these sizes has most naturally its own fixed size of gas-inlet and its own fixed size of the burner-head. The expense of carrying in stock a large assortment of complete burners is considerable. By my invention, however, the same burner-tube, gas-inlet valve, and the greater part of the burner-head may be utilized for all the different candle-powers by simple using a head-shell of the proper size and adjusting the gas-valve to correspond therewith. Thus when a burner has been installed in a house and found after use to be insufficient or otherwise unsatisfactory as to the amount of light produced it is only necessary to purchase a new head-shell at a very small cost and to adjust the gas-valve to accord therewith. It is not intended that the valve should be too readily adjusted, because the efficiency of the burner might be accidentally and needlessly reduced. For this reason the valve should have a nice adjustment upon the collar B and be placed entirely within the mixing-tube. It will thus be seen that the adjustable gas-inlet valve co-

operates with the burner-head having a removable head-shell to produce an exceedingly useful, efficient, and desirable result.

The head-shells which are used with incandescent mantles of different candle-powers are made of a size to correspond therewith, the diameter of the upper end being substantially that of the inside diameter of the lower end of the mantle.

What I claim is—

1. A gas-burner having a burner-tube, an air-inlet therein, a gas-inlet, a strainer, a head-shell surrounding said strainer, gas-outlets at the top of said shell, an expansion-chamber above said shell and a gauze covering to said chamber removably carried by said head-shell.

2. A gas-burner having a burner-tube, an air-inlet therein, a gas-inlet, a strainer, a head-shell, gas-outlets at the top of said shell, and an insulated cap above said shell surmounted by a wire-gauze.

3. An incandescent gas-burner comprising a burner-tube having gas and air inlets at one end thereof, an inverted-frustum-shaped strainer at the other end of said tube, a spreader projecting downward into said strainer and a head-shell surrounding the said strainer and supporting said spreader independently of the strainer and having a plurality of passages in the top for the inflammable mixture as it passes to the flame and means for removably securing the head-shell to the burner-tube.

4. An incandescent gas-burner comprising a mixing-chamber tube having air and gas inlets at or near one end, a burner-head secured to the other end of said tube including a frustum-shaped strainer, a head-shell entirely surrounding and inclosing the sides and top of said strainer and having a plurality of openings arranged in the top and means whereby the head-shell may be removably and interchangeably secured.

5. A gas-burner comprising a mixing-tube having an air-inlet, an adjustable gas-regulator situated entirely within surrounded by the said tube and immediately adjacent the air-inlet so that the regulator may be adjusted only by the insertion of some implement through the air-inlet, but without interference with the size of the air-inlet.

6. A gas-burner including a tube or member having an air-inlet, a partition in said tube having a gas-passage therethrough below the air-inlet, a conical valve-seat and a valve-cap having an opening through the center and adapted to coact with the valve-seat, the said valve-cap being situated within the said tube and entirely surrounded thereby but accessible through the air-inlet whereby the amount of gas flowing may be regulated without affecting the size of the air-inlet.

7. A gas-burner comprising a mixing-tube having an air-inlet, a partition in said tube

having a gas-passage therethrough, a conical valve-seat projecting from said partition, a collar projecting from said partition and surrounding the valve-seat, a valve-cap coacting with said collar and valve-seat accessible for adjustment through the air-inlet and forming a chamber through which gas passes | and may expand before passing out through the opening between the valve-seat and the valve-cap.

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Witnesses:

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