No. 662,035. Patented Nov. 20, 1900.

C. S. STEWARD.

GAS BURNER.

(Application filed Jan. 14, 1898.)

(No Model.)

Fig. I.

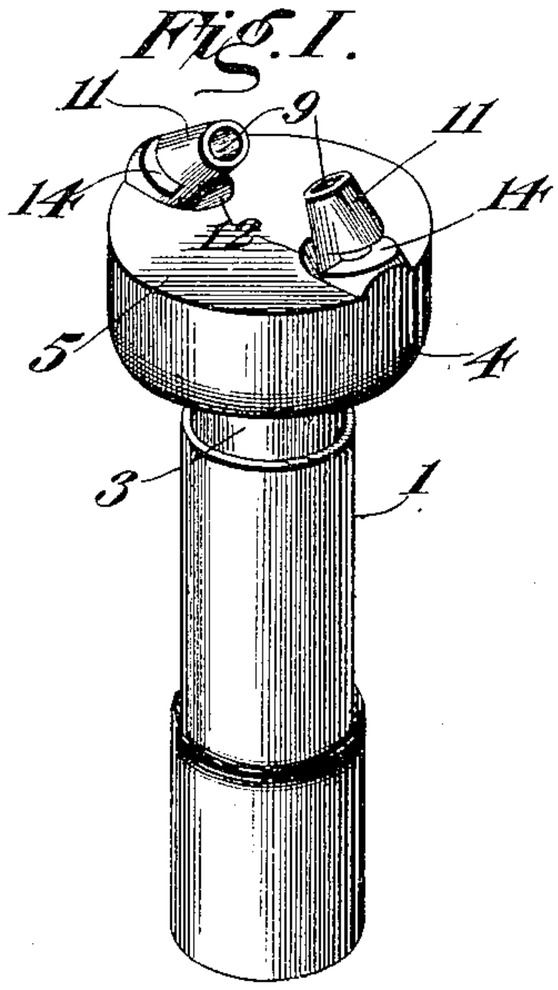


Fig. II.

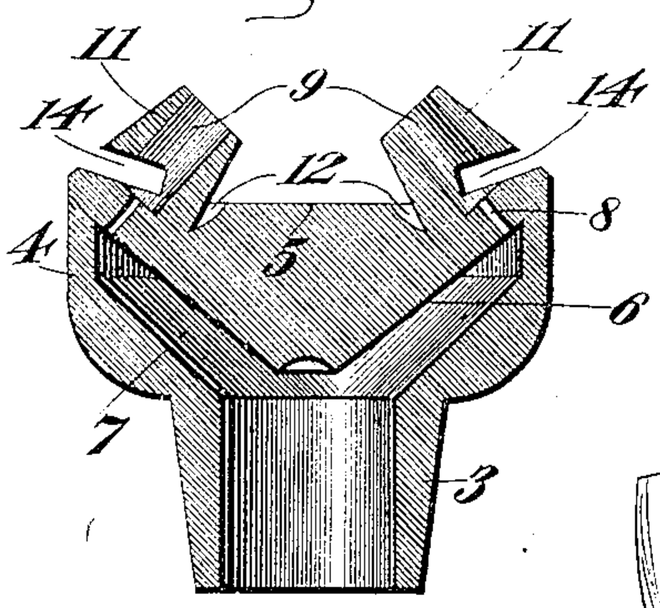


Fig. IV.

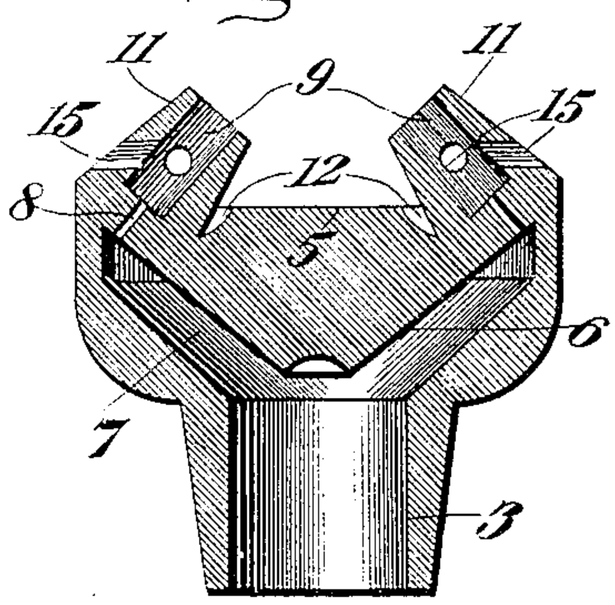
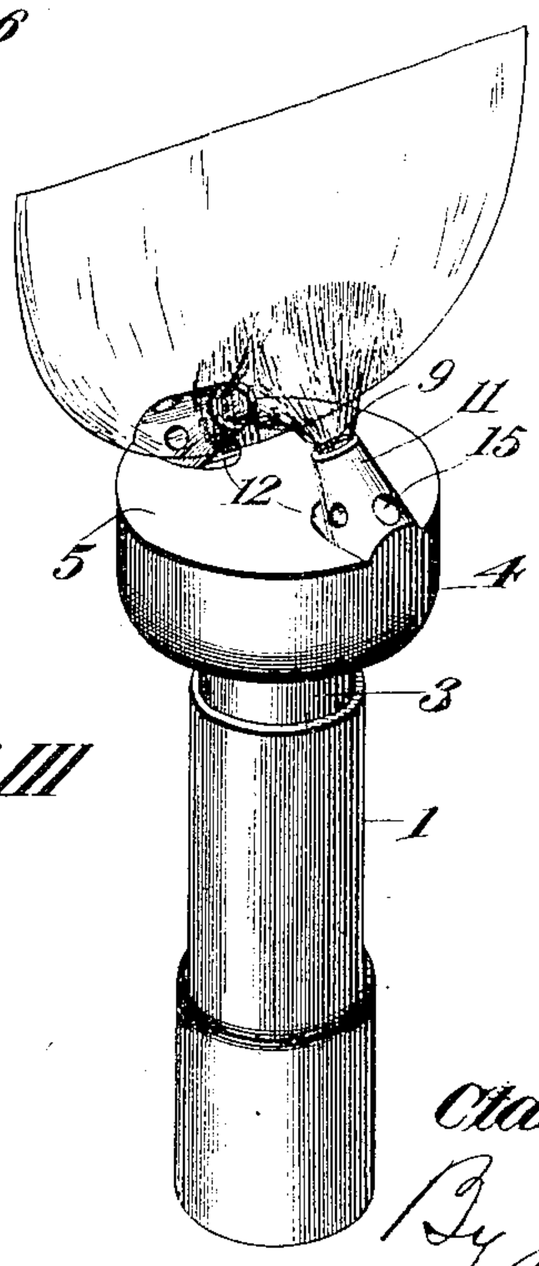


Fig. III



Witnesses
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UNITED STATES PATENT OFFICE.

CLARENCE S. STEWARD, OF CHATTANOOGA, TENNESSEE.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 662,035, dated November 20, 1900.

Application filed January 14, 1898. Serial No. 666,684. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE S. STEWARD, of Chattanooga, in the county of Hamilton, State of Tennessee, have invented certain new and useful Improvements in Gas-Burners, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce improvements in burners for facilitating the use of gases that are rich in carbon—such, for example, as acetylene gas. It is necessary in the employment of gases especially rich in carbon for illuminating purposes to approximate perfect combustion at each point of ignition in order to prevent the deposit of carbon at such points.

It is generally accepted by those skilled in the art that the commingling of gas with air preparatory to ignition tends to perfect combustion. I propose to produce in a self-contained burner-tip means for commingling the gas with air in order to perfect the combustion.

By a "self-contained" burner-tip I mean a burner-tip complete in itself, without attachments of any kind.

In the accompanying drawings, Figure I is a perspective view of one form of my burner. Fig. II is a sectional view of the tip detached. Fig. III is a perspective view of a modified form of tip detached, and Fig. IV is a sectional view of the same.

In the accompanying drawings, 1 indicates a pillar of any ordinary and suitable construction. It is illustrated only as an example of means for supporting the tip 2. The tip may be made of any desirable shape and of any suitable material, preferably of a single piece of steatite. It is provided with a collar 3, which, fitting into the end of the pillar, serves to unite it and the pillar, as in the usual manner. The collar is surmounted preferably by an expanded or bulbous head 4, which is preferably finished with a flat top or table 5. The under surface 6 of the table as illustrated is inversely conical, being defined by a conical passage 7, that communicates with the bore of the collar 3.

It is essential that the passage 7 should be inclined, so as to accommodate convergent minute ducts 8. Two passages might be employed for this purpose; but I prefer to employ the single conical passage 7, because it may be conveniently formed in the tip by suitable instruments familiar in the art of working steatite and similar materials. That form of tip 2 and of the passage 7 fashioned within it are illustrated only by way of example and may be modified without departing from the scope of my invention.

The convergently-disposed minute ducts 8 discharge into enlarged apertures 9, bounded, respectively, by preferably cylindrical walls 11, which constitute isolated outlets. Each of the outlets 11 is isolated by being elevated above the table 5 and by the presence of an undercut 12 in order that it may not present surfaces favorable for the deposit of carbon. The ducts 8 are so inclined as to discharge one against the other impinging jets of gas, which, being ignited, support a flame suspended in mid-air midway between them. Their angle of inclination with respect to the table 5 is such as to support a flame in close juxtaposition to but separated from the surface of the table.

In order to accomplish the desired admixture of air with the gas before it is supplied at the point of ignition, I prefer to cause it to pass bodily through an air-chamber 14. This chamber may be formed by kerfs in the respective outlets 11, as illustrated, for example, in Figs. I and II. The diameter of the bores of the respective outlets 11 is proportionately much greater than that of the ducts 8. Consequently gas admitted from the ducts under pressure expands within the chamber 14 and, commingling with the air, is carried by the force of the current supplied from the ducts 8 through the apertures 9, bounded by the walls 11, where it is ignited.

Instead of the air-chamber 14 a series of apertures 15, extending through the walls of the outlets 11, respectively, near their bases, may be employed, after the manner of the ordinary Bunsen burner.

The modification last referred to is clearly illustrated in Figs. III and IV of the drawings.

What I claim is—

1. A gas-burner comprising a head having a top provided with an inversely-conical under surface, said conical under surface being surrounded by the bore of the head, defined by an outer wall thereof having its inner sur-

face substantially parallel with the conical under surface of the top and in close juxtaposition thereto, whereby gas within the bore is spread in a thin layer over the cone, ducts provided in the head and oppositely-discharging outlets communicating with the ducts, the bore of the outlets being greater than that of the ducts, and means for supplying air to the bore of the outlets, substantially as set forth.

2. A gas-burner composed entirely of steatite or other suitable material, comprising a head provided with a bore, and ducts leading therefrom, of isolated, oppositely-discharging outlets defined by undercuts from the surface of the head, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

CLARENCE S. STEWARD.

Witnesses:
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GEORGE GARDENHIRE.