No. 676,374.

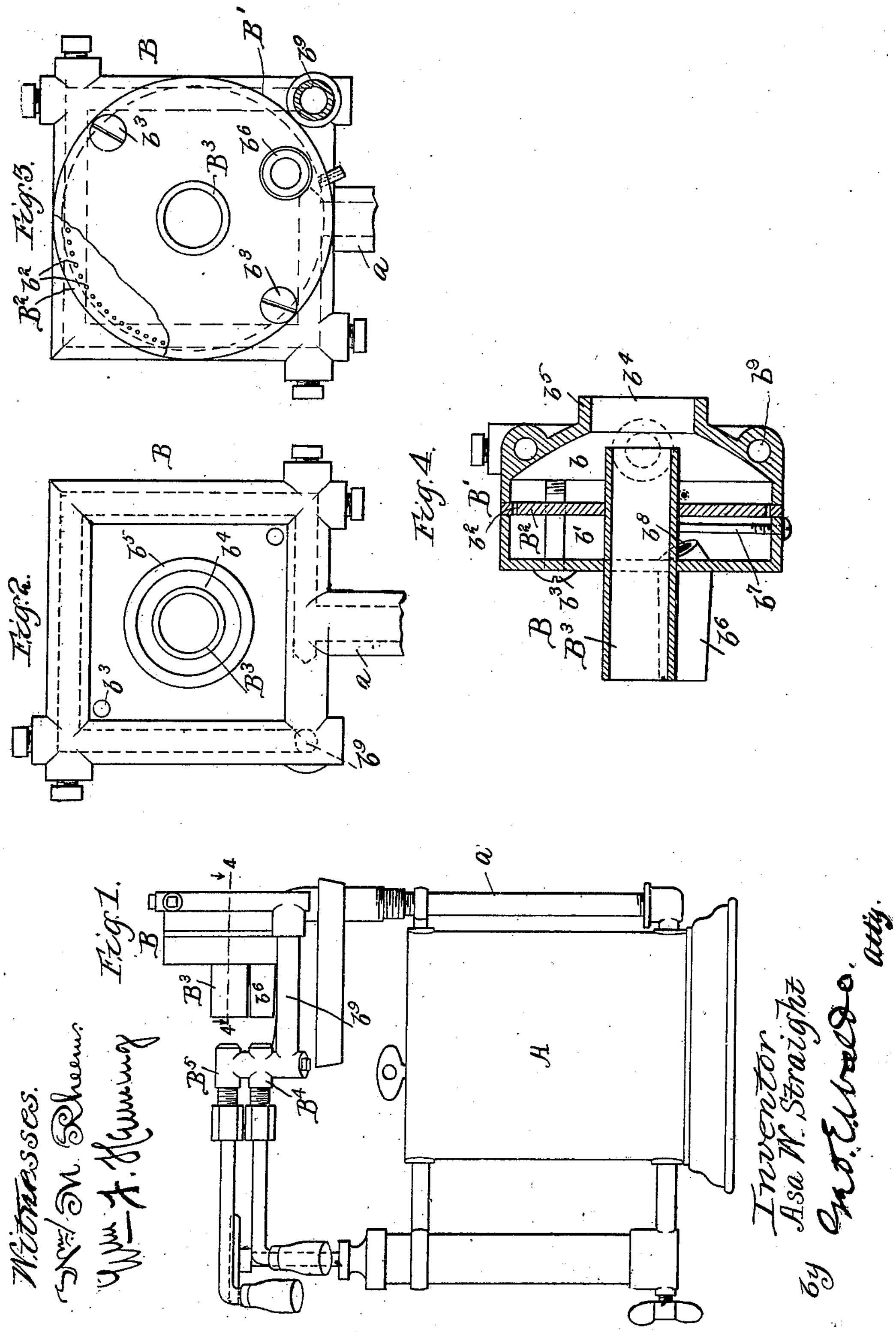
Patented June 11, 1901.

A. W. STRAIGHT.

BURNER.

(Application filed Mar. 10, 1896.)

(No Model.)



UNITED STATES PATENT OFFICE.

ASA W. STRAIGHT, OF EVANSTON, ILLINOIS, ASSIGNOR OF ONE-HALF TO THE TURNER BRASS WORKS, OF CHICAGO, ILLINOIS.

BURNER.

SPECIFICATION forming part of Letters Patent No. 676,374, dated June 11, 1901.

Application filed March 10, 1896. Serial No. 582,580. (No model.)

To all whom it may concern:

Be it known that I, ASA W. STRAIGHT, a citizen of the United States, and a resident of Evanston, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Burners, of which the following is a specification.

This invention relates to improvements in gas-burners, and relates particularly to improvements in burners designed for use on blowpipes, gasolene-torches, and the like.

Primary objects of the invention are to provide means in combination with a burner to regulate the respective quantities of gas and of air delivered to said burner, so that the proper proportions of gas and of air may be obtained to secure perfect combustion, to provide a burner of such construction that the gas and air delivered thereto will be thoroughly intermingled, and to insure that when gasolene or the like is used for fuel it will be thoroughly vaporzied when delivered to the burner.

In the preferable form thereof now known to me a burner embodying my invention comprises a shell or casing, which is divided into front and rear compartments by means of a partition, a series of holes or perforations formed in said partition, preferably adjacent to the edges thereof, an admission opening or tube to the rear compartment of said shell or casing, a discharge-opening from the front compartment of said shell or casing, a tube which extends through said shell or casing, the front or discharge end of which terminates within the front compartment of the shell or casing and the rear or admission end of which projects without the rear end of said shell or casing, and spray-nozzles adapted to discharge fuel from the source of supply into and through said shell or casing and said tube.

The invention also consists in the various other features, combinations of features, and details of construction hereinafter described and then pointed out in the claims.

In the accompanying drawings a burner embodying my invention is fully illustrated.

Figure 1 is a side view of a gasolene-torch equipped with my improved burner. Fig. 2 is a front view of my improved burner. Fig. 3 is a rear view thereof, and Fig. 4 is a horizontal sectional view thereof on the line 4 4 of Fig. 1.

Referring now to the drawings, in which I have shown my improved burner as applied to a gasolene-torch, A designates the fuel tank or reservoir of said torch, which may be of any usual or approved construction and need not be described in detail, and B designates as a whole a burner embodying my invention. The burner B is supported at the upper end of a tube *a*, which in the preferable construction shown communicates with said tank or reservoir A, at the bottom thereof, and extends upward on the outside thereof, being supported at a distance therefrom. Said tube will thus always be exposed to and surrounded by air throughout its entire length, and will be kept cool thereby, insuring that said tank and its contents will be practically unaffected by the heat generated by the burner.

The burner B consists of a shell or casing B′, which is divided into front and rear compartments *b b′* by a partition or baffle-plate B^2, said compartments being connected by means of holes or perforations b^2, formed in said partition B^2. In the preferable construction shown the shell or casing B′ is circular in vertical cross-section, and the holes or perforations form a regular series extending entirely around said partition closely adjacent to the sides of the shell or casing. For convenience in constructing said burner and to render the interior thereof readily accessible the shell or casing B′ comprises several sections, which are secured together to form a rigid structure by screws or bolts b^3.

In the front end of the shell or casing B′ is formed a discharge opening or orifice b^4, which communicates directly with the front compartment *b* of the shell or casing and around the edge of which is formed an outwardly-projecting flange b^5, and the rear compartment *b′* is provided with an admission pipe or tube b^6. The discharge-orifice b^4 is relatively large as compared with the admission-tube b^6 and is located at the center of said shell or casing, while the admission-tube b^6 is located eccentrically relatively thereto.

Extending longitudinally through the shell

or casing B′, concentric therewith, is a tube B^3, the forward end of which terminates just within the front of said shell or casing and the rear end of which projects through the rear wall of said shell or casing, the extreme end thereof being practically flush with the end of the tube b^6. A screw b^7 secures said tube B^3 in position relatively to the shell or casing B′. The size of the tube B^3 depends upon the size of the flame which said burner is designed to create, being made larger or smaller, as the flame desired is larger or smaller.

Fuel to support combustion is supplied to the burner B from spray-nozzles B^4 B^5, which may be of any usual construction and which are located opposite the rear ends of the tubes b^6 and B^3, respectively, and are adapted to discharge a spray longitudinally thereof.

Opposite the inner end of the tube b^6 is a deflecting-surface against which the spray discharged into said tube is projected and which operates to distribute said spray to all parts of the shell or casing with substantial uniformity. As shown, the inner end of the tube b^6 is bent at a sharp angle, as clearly shown at b^8, thus forming the deflecting-surface desired.

The spray-nozzles B^4 B^5 are connected with the tube a by a passage b^9, which comprises a tortuous section formed in the front end of the shell or casing B′. Obviously when said burner is operating the contents of the passage b^9 will be heated to a high degree and in the case of light oils converted into vapor or gas, in which form it will be delivered to the burner.

Desirable dimensions for the burner are as follows: for the shell or casing B′ about one and one-half inches in length by from one to three inches in diameter, for the discharge-orifice b^4 from one-half to one inch, for the tube B^3 from one-eighth to three-fourths of an inch, and for the pipe or tube b^6 about five-sixteenths of an inch.

The operation of my improved burner is as follows: The passage from the tube b^6 to the discharge-orifice b^4 being obstructed by the partition or baffle-plate B^2, the draft created by the spray from the nozzle B^4 will be retarded and will supply insufficient air to said burner to secure perfect combustion. The passage through the tube B^3 being entirely free, the spray from the nozzle B^5 will, on the other hand, be surcharged with air. These two supplies are blended at the discharge-orifice b^4, so that by properly regulating the valves controlling the fuel-supplies to the tubes B^3 and b^6, respectively, the proper proportions of air and gas may be obtained to secure perfect combustion.

I claim—

1. In a burner the combination of separate passages or chambers, discharge-openings therein, which register with each other, means to project gaseous fuel through one of said passages or chambers together with more air than necessary to secure perfect combustion thereof, means to project gaseous fuel through the other of said passages or chambers together with less air than necessary to secure perfect combustion thereof, and means to regulate the amount of gaseous fuel and of air delivered to each of said passages or chambers, substantially as described.

2. In a burner, the combination of a passage-way or flue provided with a baffle and an unobstructed passage-way or flue, said passage-ways or flues being provided with admission-openings and with discharge-openings which register with each other and independent means to project fuel into each of said passage-ways or flues, substantially as described.

3. In a burner, the combination of a shell or casing, a perforated partition, which divides said shell or casing into communicating compartments, an admission-tube to one and a discharge-orifice from the other of said compartments, an open-ended tube, which is supported within said shell or casing, in such position that the discharge end thereof will register with the discharge-orifice of said shell or casing and means to discharge jets of gas or other fuel into said shell or casing and into said tube, substantially as described.

4. In a burner, the combination of a shell or casing, a perforated partition, which divides said shell or casing into communicating compartments, the perforations in said partition being distributed uniformly on all sides thereof, an admission-tube to one and a discharge-orifice from the other of said compartments, an open-ended tube, which is supported within said shell or casing, in such position that the discharge end thereof will register with the discharge-orifice of said shell or casing and means to discharge jets of gas or other fuel, into said shell or casing and to said tube, substantially as described.

5. In a burner, the combination of a shell or casing, which is circular in vertical cross-section, a perforated partition, which divides said shell or casing into communicating compartments, the perforations in said partition forming a uniform series around the same, adjacent to the sides of the shell or casing, an admission-tube to one and a discharge-orifice from the other of said compartments, an open-ended tube, which is supported within said shell or casing, in such position that the discharge end thereof will register with the discharge-orifice of said shell or casing and means to discharge jets of gas or other fuel into said shell or casing and to said tube, substantially as described.

6. In a burner, the combination of a shell or casing, a perforated partition, which divides said shell or casing into communicating compartments, an admission-opening to one and a discharge-orifice from the other of said compartments, an open-ended tube supported within said shell or casing in such position that the discharge end thereof registers with the discharge-orifice of said shell or casing,

means to discharge jets of gas or other fuel into the admission-opening of said shell or casing and into said tube and a deflecting-surface in said shell or casing against which the jet, which enters said shell or casing is projected, substantially as described.

7. In a burner, the combination of a shell or casing, which is circular in cross-section, a perforated partition therein, which divides said shell or casing into communicating compartments, the perforations in said partition forming a uniform series extending entirely around the same, an admission-opening to one compartment of said shell or casing, which is located eccentrically, relatively to the center of said shell or casing, a discharge-orifice from the other compartment of said shell or casing, which is concentric with said shell or casing, a tube supported within said shell or casing, concentric therewith, the discharge end of which terminates within said shell or casing, means to discharge jets of gas or other fuel into the admission-opening of said shell or casing and into said tube, and a deflecting-surface in said shell or casing, against which the jet, which enters the admission-opening thereof is projected, substantially as described.

8. In a gasolene-torch or the like, the combination of a burner, comprising a shell or casing, a perforated partition, which divides said shell or casing into communicating compartments, an admission-opening to one and a discharge-orifice from the other of said compartments, a tube which is supported within said shell or casing the discharge end of which registers with the discharge-orifice of said shell or casing, spray-nozzles adapted to discharge gas or other fuel into said tube and into the admission-opening of said shell or casing, respectively, and a passage-way which connects said spray-nozzles with a source of fuel-supply, said passage-way comprising a section which extends around the shell or casing of said burner, substantially as described.

In testimony that I claim the foregoing as my invention I have hereunto set my hand this 4th day of March, 1896.

ASA W. STRAIGHT.

Witnesses:
GRACE FERN,
F. C. CRITTENDEN.