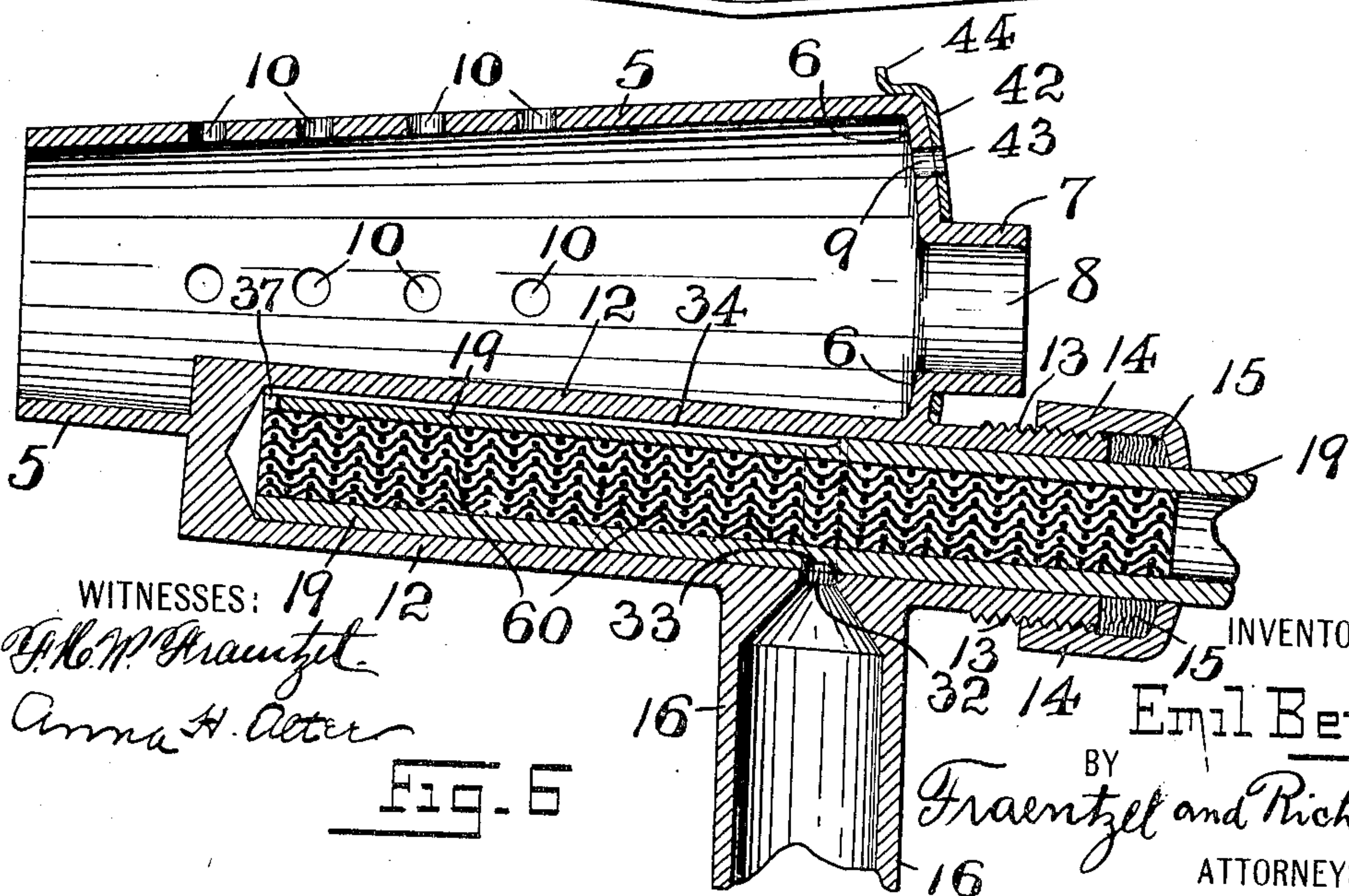
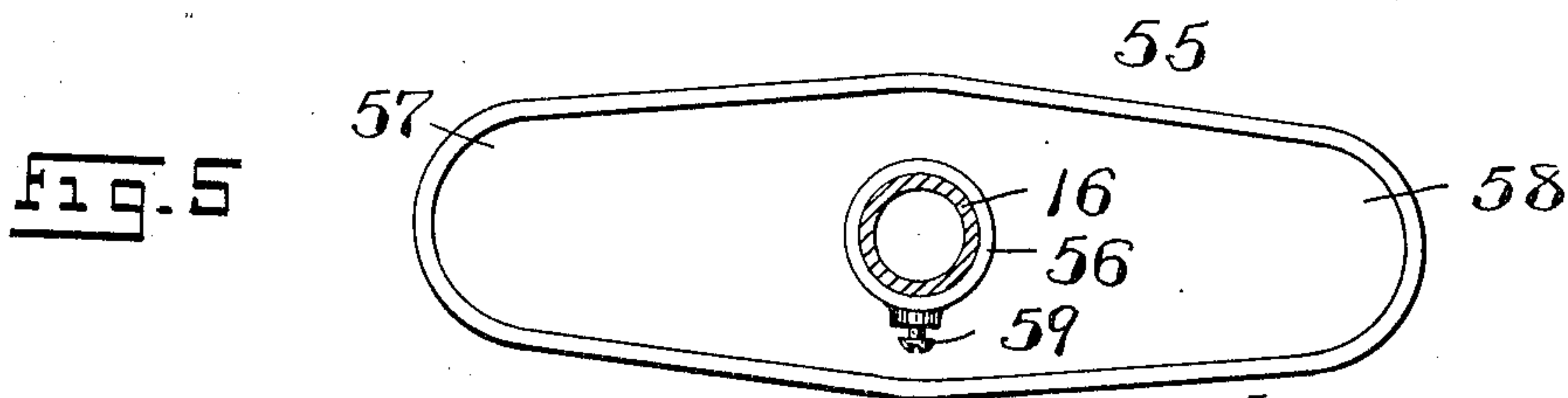
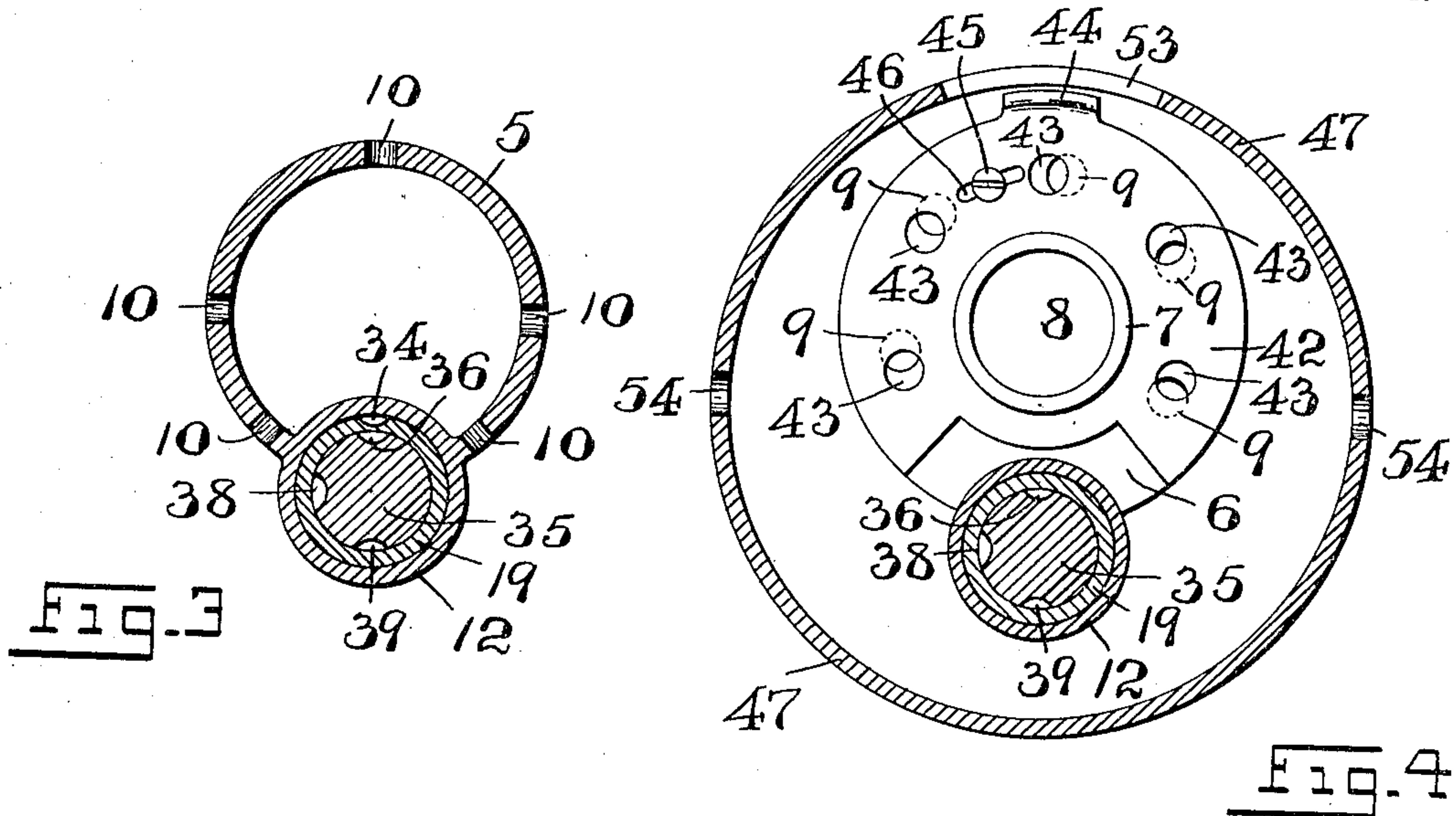


E. BEYER.
BURNER FOR BLOW TORCHES.
APPLICATION FILED MAY 12, 1908.

913,611.

Patented Feb. 23, 1909.
2 SHEETS—SHEET 2.



WITNESSES:
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FIG. 6

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UNITED STATES PATENT OFFICE.

EMIL BEYER, OF NEWARK, NEW JERSEY.

BURNER FOR BLOW-TORCHES.

No. 913,611.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed May 12, 1908. Serial No. 432,367.

To all whom it may concern:

Be it known that I, EMIL BEYER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Burners for Blow-Torches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention has reference, generally, to improvements in that class of burners which are used with what is known in the art as blow-torches; and, the present invention relates, more particularly, to a novel construction of burner which is used with a receptacle in which the gas-producing medium, such as kerosene, or the like, is stored under pressure, the burner being constructed in such a manner, that the gas-producing medium is forced through the parts of the burner-mechanism in a circuitous manner, and is delivered in a fine spray prior to its entrance into the burner or ignition-chamber, the sprayed gas-producing medium being intimately mixed with air before its entrance into the burner or ignition-chamber, so as to produce a perfect mixture and combustible gas which is expelled in a burning condition and a hot flame from the end-portion of the burner or ignition-chamber.

My present invention has for its principal object to provide a novel burner for blow-torches, which shall be of a simple construction, and shall be efficient in causing the gas-producing medium to be intimately mixed with air and delivered in a fine spray, under pressure, into the burner or ignition-chamber; and, the invention has for its further object to provide a novel means for producing a circuitous passage of the gas-producing medium from the receptacle in which it is stored, to the point of the delivery of the said medium, where it is mixed with air before entering the burner or ignition-chamber.

This invention has for its further object to provide an adjustably arranged spraying or delivery valve, which is to be used in connection with the burner hereinafter more fully set forth; and, furthermore, to provide in addition to a burner for blow-torches, a novel drip-cup such as will be hereinafter more fully set forth.

Other objects of this invention not at this time more particularly enumerated will be clearly evident from the following detailed description of the said invention.

With the various objects of my present invention in view, the same consists, primarily, in the novel burner for blow-torches hereinafter set forth; and, the invention consists furthermore, in the use, in connection with a burner of the general character hereinafter set forth, of means for regulating and controlling the supply of the air into the ignition chamber; and, furthermore, to provide means for retaining the generated heat, as much as possible, within the ignition chamber.

The invention consists, furthermore, in the novel arrangements and combination of devices and parts, as well as in the details of the construction of the same, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claim which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is an elevation of a portion of a receptacle and a force-pump such as used in blow-torches, and a side-elevation of my novel form of burner used in connection therewith, a certain portion of the burner being represented in longitudinal section. Fig. 2 is a longitudinal vertical section of the said burner. Fig. 3 is a transverse vertical section taken on line 3—3 in said Fig. 1, looking in the direction of the arrow *x*; and Fig. 4 is a similar section taken on line 4—4 in said Fig. 1, looking in the direction of the arrow *x*, both of said views being made on enlarged scales. Fig. 5 is a top view of a drip-cup and horizontal sectional representation of the pipe-connection upon which said cup is arranged. Fig. 6 is a longitudinal vertical section, on an enlarged scale, of portions of the burner, showing a modified construction of the same.

Similar characters of reference are employed in all of the above described views to indicate corresponding parts.

Referring now to the said drawings, the reference-character 1 indicates a suitable

receptacle, such as is used in the construction of blow-torches for the reception of a gas-producing medium, as kerosene or the like, said receptacle being provided in its upper portion with a tubular and interiorly screw-threaded enlargement or boss 2 which forms an outlet with which the supply tube of the burner is to be connected, substantially in the manner to be presently more fully described. Reference character 3 indicates a tubular member which is suitably connected with the said receptacle 1, and is made in the form of a force-pump, which, while it serves as a handle for the receptacle 1, also serves to produce a pressure of air upon the gas-producing medium within the receptacle 1, so as to forcibly emit the gas-producing medium from the sprayer valve of the burner, when the said valve is removed from its valve-seat, substantially in the manner and for purposes to be presently more fully described.

The burner which embodies the principal features of my invention is indicated by reference-character 4, and the same comprises a suitably tapered or cone-shaped flame or ignition chamber 5 having its enlarged end-portion made with a closing wall 6 which is formed with a tubular and preferably annularly shaped boss 7 providing an inlet 8. The wall 6 is also formed with air-inlets 9, and in the side-walls of the tapered flame or ignition chamber, another air-inlet 10 may be provided. The reference-character 11 indicates the open end-portion of the said flame or ignition-chamber from which the flame is forced when the device is operated.

Suitably connected with the tapered or cone-shaped casting in the form of which the ignition chamber is usually made is a tubular conveying duct or element 12, the same being preferably cast in one integral piece with the said tapered shell or body-portion 5 forming the ignition chamber. Upon one of its free ends the said tube-like element 12 is provided with a screw-threaded portion 13 for the screwing thereon of a packing-nut 14 in which is arranged a suitable packing 15. The said tubular or duct-like element 12 is also provided with a downwardly extending tubular element or member 16 which is formed with a screw-threaded portion 17 for suitably screwing the same into the interiorly screw-threaded enlargement or boss 2 into the receptacle 1, as will be clearly evident, and the said tubular element or member 16 being provided with a conveying duct or tube, as 18, which extends down into the interior of the receptacle 1, as will be clearly understood. Suitably arranged within the said tube-like element 12 is another tube or pipe-like member or element, as 19, which extends from the screw-threaded end-portion 13 of the

member or element 12, and from the packing-nut 14, substantially as shown, the said tube or pipe 19 being bent at a right angle, or approximately so, so as to provide an upwardly extending portion 20. Connected with said portion 20 is a horizontally extending tubular member 21 which is chambered, as at 22, and is provided at one end with an internally screw-threaded part 23, and at its other end-portion is made with a preferably cone-shaped valve-seat 24, substantially as illustrated in Fig. 2 of the drawings.

The reference-character 25 indicates a suitably formed rod or spindle having a screw-threaded portion 26 which registers with the internally screw-threaded part 23 of the member 21, so as to turn within the chamber 22, and so as to be adapted to be moved back and forth therein to cause a pointed or cone-shaped end 27 of said rod or spindle 25 to rest directly upon the cone-shaped valve-seat 24 and close the outlet opening therein, or to suitably adjust the distance of said cone-shaped end 27 from the valve-seat 24, to regulate the spray of the gas-producing medium, which is to be ejected from said opening, as may be found necessary to produce the proper mixture of the medium and air at this point, and thereby provide the proper and most efficiently acting flame within the ignition chamber formed by the shell or body-portion 5, as will be clearly evident. The said rod or stem 25 may be provided at its end-portion which extends from the internally screw-threaded portion 23 with a handle or finger piece, as 28, or other suitably formed fingerpiece, for operating the same. The member or element 21 may also be provided with an externally screw-threaded part 29 for the reception of a suitable packing-nut 30, and packing 31 in said nut, in which the said stem or spindle 25 is rotatably arranged, substantially as shown.

The previously mentioned tube-like element or duct 16 is provided with an outlet or opening, as 32, which registers with an annular groove or depression 33 in the cylindrical surface of the tube-like element or member 19, and in the upper portion of the outer cylindrical surface of said tube-like element or duct 19 is a longitudinally extending groove or channel 34, which connects with the groove 33. Suitably arranged within the said tube-like element or duct 19 is a cylindrically shaped rod, as 35, in the upper surface of which is a longitudinally extending groove or channel 36, which communicates, at 37, with the groove or channel 34. The said rod 35 is also provided with two other grooves or channels 38 and 39, the groove or channel 38 being connected at its one end with the groove or channel 36, by means of a short groove 40, and at its other

end the said groove or channel 38 is connected with the groove or channel 39 by means of another short groove 41, and the said groove or channel 39 terminating at the end of the rod 35 and being in communication with the interior of the tube-like member or element 19, at or near the right-angled portion 20 of said tube-like member or element 19, as clearly indicated in said Fig. 2 of the drawings.

From the foregoing description of the several parts hereinabove described, it will be clearly evident, that the gas-producing medium, such as kerosene, or the like, which is contained under pressure within the receptacle 1, when the outlet in the valve-seat 24 has been opened, will be forced through the pipe or duct 18 into the member 16, and will then make its way through the circuitous passage-ways formed in the tube-like elements 12 and 19 and the rod 35, where it is converted into a vapor, being delivered into the chamber 22, and finally forced in a fine spray, which is regulated by the position of the rod, stem or spindle 25, from the outlet connected with the cone-shaped valve-seat 24 of the member or part 21. This fine spray of the gas-producing medium, as will be evident, is forced across the open space between the end of the member 21 and the tubular boss or inlet 7 of the shell or body 5, and while being ultimately mixed at this point with the air, so as to produce a combustible mixture, is forced directly into the interior or chambered portion of the said shell or body 5. The mixture can be readily ignited within said shell or body 5, by means of a lighted match, the lighted gas or flame being forced for use directly from the outlet 11 of said shell or body 5. Any necessary additional supply of air may be added to the gaseous-mixture through the holes 9 and 10 in said shell or body 5, as will be clearly evident. If desired, a disk or plate 42 for regulating or for entirely shutting off the supply of the air through the air-holes or perforations 9 may be rotatably disposed upon the tubular boss or enlargement 7, as shown in the several figures of the drawings, said disk or plate 42 being formed with suitably disposed holes or perforations 43 which register with the holes or perforations 9, and said disk or plate being provided with a suitably formed finger-piece, as 44, for moving the disk or plate back and forth, as may be necessary, for entirely closing off the holes or perforations 9, or for reducing their supply-area, as will be understood. The said disk or plate 42 is suitably held in its operative position against the outer face of the end-wall 6 of the shell or body 5, by means of the head of a suitable screw 45, the shank of which extends through an elongated opening 46 in said disk or plate 42, so as to allow for the necessary movement of the latter,

and is screwed directly into the wall 6 of the shell or body 5.

If desired, the various parts of the burner may also be surrounded by means of a suitably formed guard or protector, as 47, which is preferably of the general conformation shown in the drawings, and is provided in its closed end-portion 48 with a tubular hub 49 for arranging said guard or protector upon the valve-rod, stem or spindle 25, and securing it thereon by means of a set-screw 50, or other fastening means. The open end-portion 51 of the guard or protector 47 is preferably made so as to extend for a distance over the closed end-portion of the shell or body 5 and surrounds the same, as shown; and, in order that the rotary action for the adjustment of the valve-stem, rod or spindle 25 will not be interfered with, the said guard or protector 47 is sufficiently cut away, as at 52, to permit of the proper rotary motion of the spindle or rod 25, and of the adjustment of its cone-shaped valve-end, as will be clearly evident. The said guard or protector 47 is also cut away, as at 53, to provide a suitable opening, to permit the operator to manipulate the fingerpiece 44 of the regulating disk or plate 42. The said guard or protector 47 is also provided with suitably disposed holes or perforations 54 through which a supply of air is admitted into the interior of the guard or protector for producing a proper mixture of the gas-producing medium and air.

While the member or device 47 serves as a proper guard or protector against the hand of the operator being brought in accidental contact with the hot parts of the device, the guard or protector also has this beneficial advantage, that the heat which is generated at the point of mixture is retained directly about the member 21, and the parts contiguous thereto, thereby resulting in a quicker and more efficacious gaseous mixture, and at the same time keeping the outside of the assembled parts of the device in a cooled condition.

A suitably formed drip-receiving device or cup 55 comprising a tubular hub 56 and two elongated cup-shaped members 57 and 57 may, if desired, be arranged upon the tubular element or member 16, by having said tubular hub arranged upon said element or member 16 and suitably fastened thereto by means of a set-screw 59. While the device 55 serves as a drip-receiving means, it will be evident, also, that it may serve as a starter or primary pan for heating the parts located above said pan. It will be understood, however, that the said drip-receiving device, as well as the previously mentioned guard or protector, may be dispensed with, if desired.

In Fig. 6, I have shown the tube-like member or element 19 provided with a slightly

modified form of oil-feeding device, and in lieu of the grooved or channeled rod shown in Figs. 2, 3 and 4, I insert in said tube-like member or element 19, a series of wire-netting or gauze layers 60, which are spirally formed into a roll, so as to be fitted within said member or element 19, and thus providing a modified means of circuitous conveyance through which the oil or gas-producing medium is compelled to pass in substantially the manner as herein-above described.

From the foregoing description of my present invention, it will be clearly seen, that I have produced a simply constructed burner for blow-torches, and the manner of forcing the gas-producing medium to and into the ignition chamber of the device will be clearly evident from the foregoing description and from an inspection of the accompanying drawings, and need, therefore, not be further dwelt upon at this time.

I am fully aware that some changes may be made in the various arrangements and combinations of the devices and parts, as well as in the details of the construction of the said parts, as described in the foregoing specification, and as defined in the appended claims. Hence, I do not limit my invention to the exact arrangements and combinations of the devices and parts as set forth in the foregoing specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

I claim:

1. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular member being formed in its outer surface with an annular medium-conducting channel and a longitudinally extending channel extending from said annular channel, and means within said tube-like element for producing a circuitous flow of the gas-producing medium through said tube-like element.

2. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a

downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular-member being formed in its outer surface with an annular medium-conducting channel and a longitudinally extending channel extending from said annular channel, and a rod within said tube-like element, said rod being formed in its surface with channels forming conveying ducts for producing a circuitous flow of the gas-producing medium through said tube-like element.

3. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular member being formed in its outer surface with an annular medium-conducting channel and a longitudinally extending channel extending from said annular channel, and a rod within said tube-like element, said rod being formed in its surface with a multiplicity of longitudinally extending channels and connecting cross-channels, said channels forming conveying ducts for producing a circuitous flow of the gas-producing medium through said tube-like element.

4. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular member being formed in its outer surface with an annular medium-conducting channel and a longitudinally extending channel extending from said annular channel, and means within said tube-like element for producing a circuitous flow of the gas-

producing medium through said tube-like element, and a protecting guard-member surrounding said valved outlet-member and the extended portion of said tubular member, substantially as and for the purposes set forth.

5. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular member being formed in its outer surface with an annular medium-conducting channel and a longitudinally extending channel extending from said annular channel, and means within said tube-like element for producing a circuitous flow of the gas-producing medium through said tube-like element, and a protecting guard-member surrounding said valved outlet-member and the extended portion of said tubular member, consisting of a cylindrical shell provided with holes or perforations, substantially as and for the purposes set forth.

6. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-thread portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular member being formed with a peripheral medium, conducting means, and means within said tube-like element for producing a circuitous flow of the gas-producing medium through said tube-like element.

7. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under

pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular-member being formed with a peripheral medium-conducting means, and a rod within said tube-like element, said rod being formed in its surface with channels forming conveying ducts for producing a circuitous flow of the gas-producing medium through said tube-like element.

8. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular member being formed with a peripheral medium-conducting means, and a rod within said tube-like element, said rod being formed in its surface with a multiplicity of longitudinally extending channels and connecting cross-channels, said channels forming conveying ducts for producing a circuitous flow of gas-producing medium through said tube-like element.

9. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said tubular member being formed with a peripheral medium-conducting means, and means within said tube-like element for producing a circuitous flow of the gas-producing medium through said tube-like element, and a protecting guard-member surrounding said valved outlet-member and the extended portion of said tubular member, substantially as and for the purposes set forth.

10. A burner for blow-torches comprising a main body or shell forming an ignition chamber, said body or shell being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body or

shell, and a tubular element extending in a downward direction from said tube-like duct and provided with a screw-threaded portion for the attachment thereof to a receptacle
5 containing a gas-producing medium under pressure, a tubular member arranged within said tubular conveying duct and having a portion extending therefrom, a valved outlet connected with said tubular member, said
10 tubular member being formed with a peripheral medium-conducting means, and means within said tube-like element for producing a circuitous flow of the gas-producing medium through said tube-like element, and a

protecting guard-member surrounding said 15
valved outlet-member and the extended portion of said tubular member, consisting of a cylindrical shell provided with holes or perforations, substantially as and for the purposes set forth. 20

In testimony, that I claim the invention set forth above I have hereunto set my hand this 8th day of May, 1908.

EMIL BEYER.

Witnesses:

FREDK. C. FRAENTZEL,
ANNA H. ALTER.