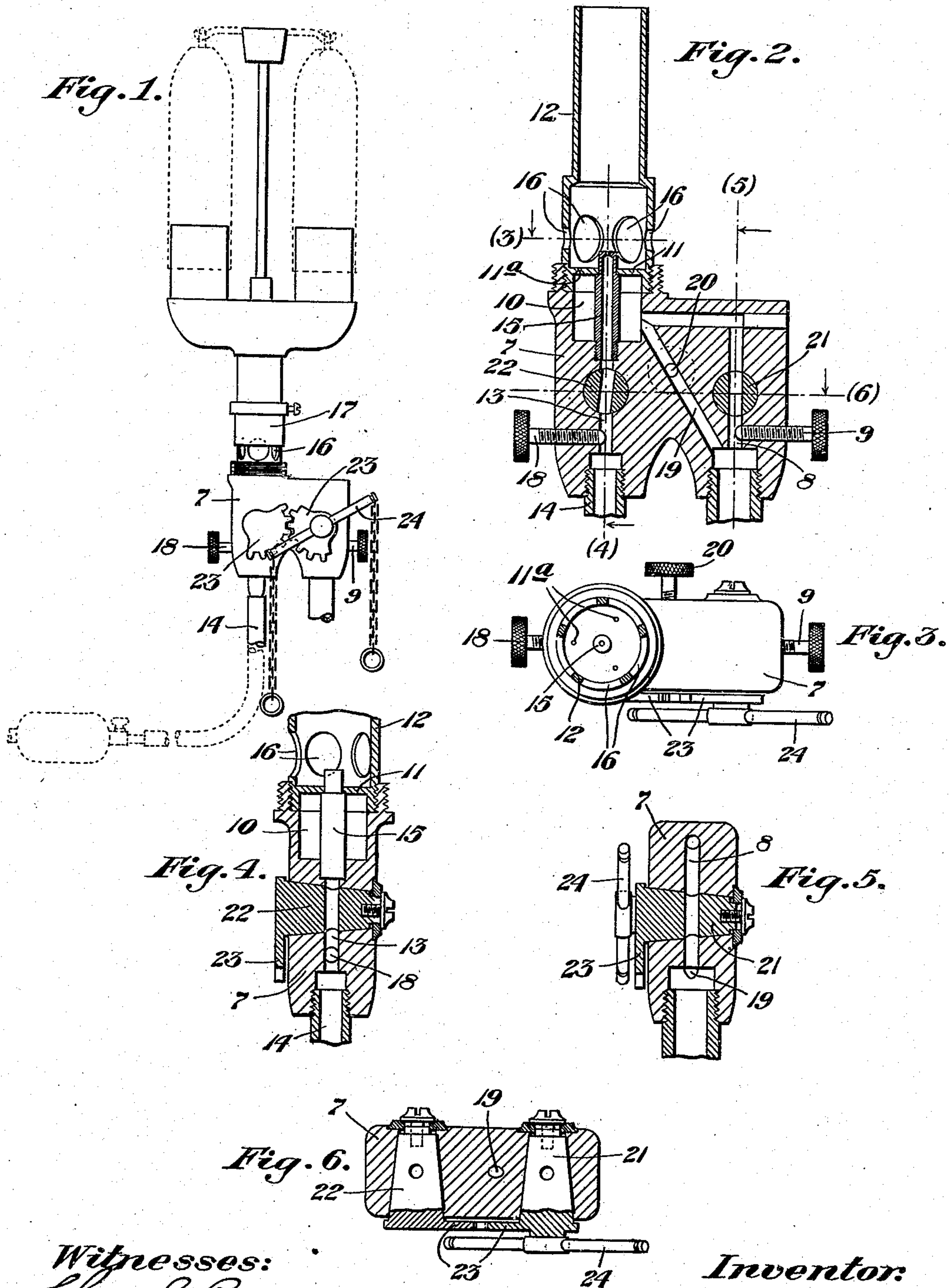


T. S. LEESE.
BURNER.

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930,672.

Patented Aug. 10, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

THADDEUS S. LEESE, OF AVALON, PENNSYLVANIA.

BURNER.

No. 930,672.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THADDEUS S. LEESE, a citizen of the United States, residing at Avalon, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Burners, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to burners for vapors and gases, and particularly to that type of burners in which air is mixed with the gas before ignition.

The primary objects of the invention are, to more efficiently and economically introduce the air, render the supply of air and gas regulable without disturbing the proportion, to insure the flame against being blown out by the air; and to provide for introducing the air efficiently by use of a small jet inside the gas tube, introducing the air without effecting the pressure of the gas supply. These objects and other advantages will hereinafter appear, I attain by the construction illustrated in a preferred form in the accompanying drawing wherein,—

Figure 1 is a side elevation of the complete burner; Fig. 2 is an enlarged central vertical section of the mixer parts; Fig. 3 is a plan and section on line (3) in Fig. 2; Fig. 4 is a vertical section on line (4) in Fig. 2; Fig. 5 is a vertical section on line (5) of Fig. 2; and Fig. 6 is a horizontal section on line (6) of Fig. 2.

In burners of the general type of my invention it is desirable to introduce a measured quantity of compressed air by a jet and a relatively measured quantity of gas by independent supply conduit mechanism, and to so arrange the parts that each supply shall be controlled by a separate valve mechanism, said valve mechanisms being operative the one by the other. Also that the parts shall be so incorporated in a rigid mounting for accurate operation, capable of being set or adjusted with relation to each other, and that means, as conduits for the gas and air respectively, shall be incorporated in the mounting element or base with separate controlling devices for the circulation, as to provide within a single structure, a rigid base with its several parts and elements, including a Bunsen burner tube, constructed and adapted to operate in the manner hereinafter more fully set forth.

In the accompanying drawing I have

shown the casing 7 provided with a gas inlet passage 8 controlled by screw valve 9 and passing from the chamber 10 through openings 11^a in diaphragm 11 into the burner tube 12, whence it escapes to one or any number of outlets which may be provided with mantles as shown in Fig. 1. Also in the casing 7 I provide an air passage 13, which by means of a small pipe 14 admits compressed air through the jet tube 15 and a small orifice therein, into the burner tube 12 and inside the volume of gas which has already passed by its pressure through the openings 11^a in plate 11 covering chamber 10. The burner tube is also provided with openings 16 which admit a free flow of outside air, and these may be regulated by a sliding collar 17 (Fig. 1). The air passage 13 is controlled by a screw valve 18.

Communicating with the gas inlet channel is a small passage 19 controlled by a screw valve 20 and leading into the chamber 10 in order to supply a small quantity of gas for a pilot light when desired.

The gas passage 8 and the air passage 13 are each supplied with separate rotary cocks 21, 22 respectively, set in the casing 7, and these cocks, as shown in Figs. 1 and 6, are supplied with partial gears 23 so that they rotate together, and are both moved by the operating handle 24 attached to one of the cocks. By this means the burner may be turned on or off, governing both the air and gas simultaneously, and still not changing the proportion of air and gas admitted. As shown in Fig. 2 however, the relation of the gears is such that the cock 21 governing the gas passage will open slightly before the cock 22 on the air passage, so as to allow the gas to ignite before the jet of air is introduced. By this construction I avoid the possibility of blowing out the flame by the air jet.

It will be noted that in the burner above described, a very small quantity of compressed air may be used, because of its independent introduction as a jet inside the Bunsen tube by which arrangement the compressed air jet will cause an indraft from the supplementary openings in the Bunsen tube. That is, of the total amount of air used, only a small portion is the compressed air introduced through the jet. On the other hand the compressed air independently entering and not being admitted to the gas chamber itself does not create any back pressure of

gas in the supply pipes, but on the contrary creates a suction thereof.

The attachment can be applied on any one or more of the ordinary fixtures in use, and does not necessitate raising the pressure in the whole gas supply. The opening for the air through the central air jet 15 being unobstructed and tapered to a small opening, and the location of such terminal opening immediately above the openings 11^a in diaphragm 11; induces the inward flow of the outside air through openings 16 with the intervening film of gas.

The incorporation of the parts, including the air and gas valves 22, 21, the screw valves 9, 20 and 22 and their ports with the various other parts within the casing 7, and the ease of setting valves 22, 21, and their gearing 23 to accurately vary and control the flow, greatly contributes to the efficiency and continuous reliability of the device. Various other advantages will be obvious to those familiar with the art.

Having thus described my invention and

illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

In a burner, the combination of an integral casing having a gas chamber and an air port, a main gas supply port opening into the gas chamber, a by-pass gas supply port communicating with the main gas port and with the gas chamber, a burner chamber, a perforated diaphragm between the gas chamber and the burner chamber, a centrally arranged air jet conductor communicating with the air port, separate gas and air controlling valves having co-acting gears, and supplemental screw valves for controlling the circulation through the air port and the main and by-pass gas ports respectively, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THADDEUS S. LEESE.

Witnesses:

F. W. H. CLAY,
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