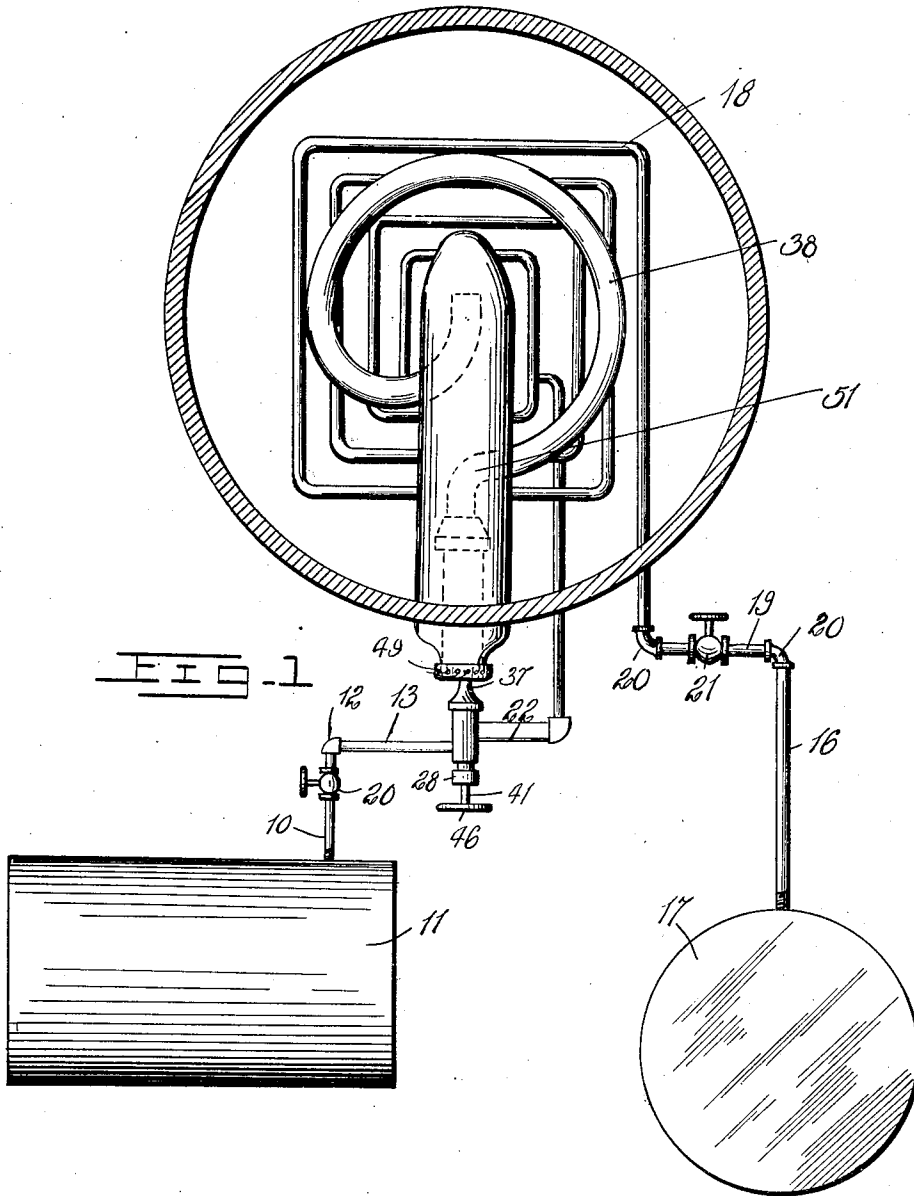


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GAS GENERATOR.  
APPLICATION FILED NOV. 20, 1919.

1,355,443.

Patented Oct. 12, 1920.  
2 SHEETS—SHEET 1.



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*Victor Auger*  
*By William H. Sinton*  
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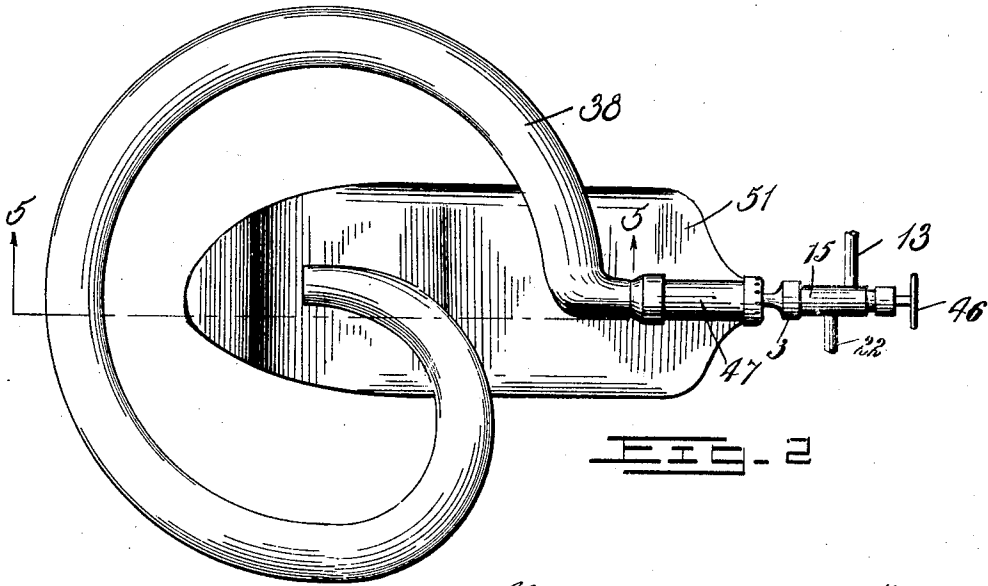
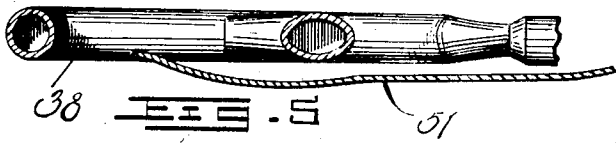
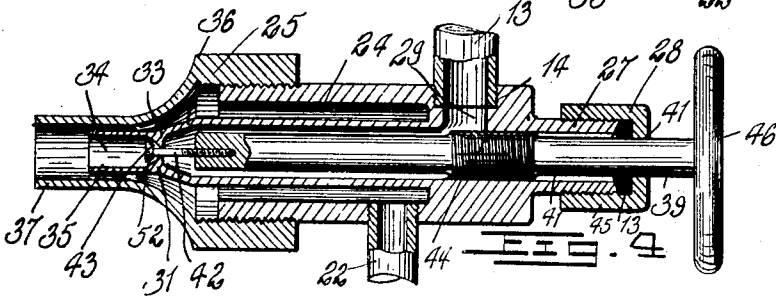
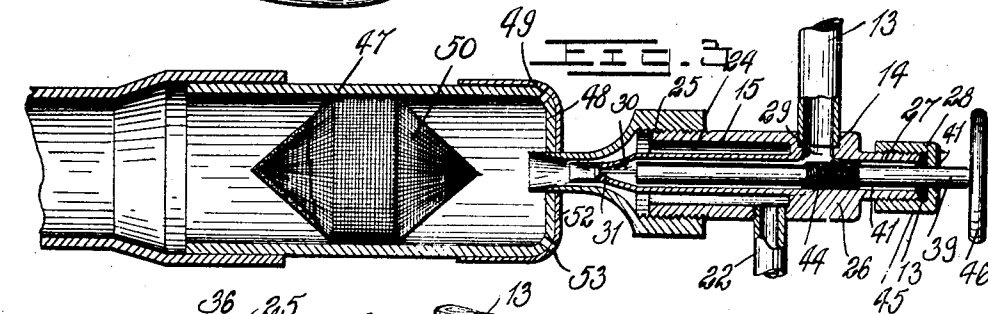


FIG. 2



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# UNITED STATES PATENT OFFICE.

VICTOR AUGER, OF MONTREAL, QUEBEC, CANADA.

GAS-GENERATOR.

1,355,443.

Specification of Letters Patent.

Patented Oct. 12, 1920.

Application filed November 20, 1919. Serial No. 339,486.

*To all whom it may concern:*

Be it known that I, VICTOR AUGER, a subject of the King of Great Britain, residing at Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Gas-Generators; and I do hereby declare that the following is 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.

The present invention has relation to improvements in liquid fuel mixers designated for generating and controlling the gas supplied to the fuel burner.

The primary object of the invention is to provide a simple, economical, accurately adjustable element, so arranged and constructed, as to prevent back pressure of the gas and to discharge an unbroken column of gas into the burner tube, whereby perfect combustion is maintained under varying low pressure conditions of the fuel gas.

The invention therefore embodies as its essential features a fluid supply nipple having an orificed tip provided with internal conical walls, which converge toward the discharge orifice to form a choke bore. The tip thus formed is equipped with a plug incased therein having a conically beveled end corresponding in pitch to the conical bore of the tip, whereby the tapered surfaces of said tip and plug together form a parallel conically disposed smooth fluid discharge thereat leading to the orifice, which throat is adjustable by a telescoping action with relation to the tip and plug to contract and expand the throat in order to adjust the fuel supply.

The invention also contemplates the adjustment of the plug member or tip, whereby the conical throat is contracted or expanded to vary the quantity of gas supplied to the burner under all conditions both as to volume and richness.

The invention also contemplates the embodiment of a simple and economical mixing chamber in connection with the burner tube together with means for varying the air inlet ports, whereby the supply of air to the burner is controlled and admitted uniformly about the solid column of gas which is discharged through the mixing chamber and into the burner tube.

With the above and other objects in view

which will hereinafter appear as the description continues, the invention consists of the novel features of construction, combination and formation of parts as will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings has been shown a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details herein exhibited, but the right is hereby reserved to any changes, alterations or modifications to which recourse may be had that come within the scope of the claims without departing from the spirit of the invention or sacrificing the efficiency of the same.

In the accompanying drawings:

Figure 1 is a bottom plane elevation with the furnace wall in cross section, illustrating the entire mixing apparatus and its relation to the furnace.

Fig. 2 is a plan view of the burner, ignition plate and the mixing tube;

Fig. 3 is a longitudinal section of the apparatus, with the operative elements in elevation;

Fig. 4 is a longitudinal sectional view of the mixing tube; and,

Fig. 5 is a section on line 5—5 of Fig. 2.

Referring by characters to the drawings, 10 represents the pipe line leading from the reservoir 11 adapted for the storage of oil comprising the fuel utilized. This pipe 10 is connected by the elbow 12 to a similar pipe 13 having its threaded end 14 screwed into an opening formed in a sleeve 15 of semi-tubular construction. A pipe 16 leads from a tank 17 and is connected to the convoluted coil section 18 by a pipe section 19 and elbows 20.

Pipes 10 and 19 carry globe valves 20 and 21, which are operable to regulate the feed of the oil and air respectively. A pipe 22 is connected to the pipe 23 of the coil section 18, which latter is positioned below the burner element to be later more fully described.

A sleeve 15 is formed with an interiorly disposed annular channel 24 and a centrally located tube 25 extends outwardly from the solid portion 26 of said sleeve to a point beyond the open end thereof. The opposite end of sleeve 15 is formed with a restricted threaded shank 27 on which is screwed a

cap 28. As will be readily seen, the annular channel 24 entirely surrounds the greater part of tube 25 and the pipe 22 leading from the compressed air reservoir 17 opens into said channel 24.

The solid part of 26 of sleeve 15, is provided with an opening 29 communicating with the hollow interior of tube 25 and the oil pipe 13 has its threaded end seated into this opening 29, so that the fuel supply enters into the tube.

The discharge end of tube 15 is formed with a concaved basin 30, the center of which basin merges into a central discharge orifice 31 which forms a truncated valve seat 32 in the wall 33. This wall 33 forms a chamber 34 within the hollow extension 35 of the said sleeve. A nipple 36 is adjustably mounted upon the outer end of sleeve 15 and is formed with a restricted and outwardly projecting extension 37. The outer end of tube 15 extends into the extension 37 of nipple 36 and the said nipple is connected to the convoluted burner tube 38.

A needle stem 39 extends through openings 40 and 41, in the cap 28 and shank 27 and into the hollow interior of the tube 25 of said sleeve 15.

The inner end of the needle stem 39 carries a restricted shank portion 42 to which is secured the valve head 43 which cooperates with the seat 32 in extension 34 of the sleeve. The needle stem is threaded at 44 at which point it engages an interior portion of the sleeve 15. Likewise the outer end portion of said needle stem 39 extends through a stuffing box comprising the packing 45 within the cap 28 and carries a hand wheel 46 on its end. This wheel 46 is adjustable to move the needle stem 39 inwardly and outwardly with respect to said sleeve and tube 15, and to seat and unseat the valve head 43 from seat 32. In this manner the flow of fuel oil passing through tube 15 and into the extension through the restricted opening 33 is regulated.

The mixing of the air with the fuel oil is effected in the following manner:

A hollow cylindrical casing member 47 is connected to the restricted portion 37 of nipple 36 and is formed with a closed outer end 48 which latter is formed with angularly disposed openings 49 and a central opening. The restricted portion of nipple 36 extends through the central opening of the casing member 47.

The casing member 47, comprises the mixing chamber of the device and the relatively thin stream of fuel oil passes through the nipple 36 and mixes with the heated air under compression, just beyond the restricted portion or extension 35 of the tube 25 and for thoroughly breaking up the molecules of air and fuel to provide a rich gaseous mixture, I pass the fuel vapors through a

double truncated screen member 50, disposed with casing 47 at the central part thereof. The screen member 50, is constructed of very fine gage wire fabric and during the passage of the gaseous mixture through said screen member, the molecules of hot air and fuel oil are thoroughly mixed, thereby increasing the richness of the inflammable gases. Likewise all impurities will be removed from the mixture and thus the fuel supply of the burner 38 contains a maximum degree of rich gases.

The air under compression is passed through the pipe coils 18 located directly under the burner 38 and is consequently heated thereby, so that when it is delivered for admixture with the fuel vapor its caloric intensity and value is greatly augmented and consequently the maximum degree of commingling of the air and gas molecules is effected.

An ignition plate 51 is connected to the casing member 47 just below the burner 38 and just prior to igniting the gaseous mixture a quantity of gasolene or free oil is placed upon the plate 51 and ignited, which action heats the air in coils 18.

For providing for an auxiliary air admission to the mixing chamber, I mount a movable cap 52 on one end of the casing member 47 and said cap 52 regulates the air openings 49. Should a greater supply of air be required in the mixing chamber, this cap 52 may be adjusted to bring the openings 53 therein, in registration with the openings 49 of said casing, to cut off the auxiliary air supply, it would only be necessary to adjust the cap 52 to cover the casing openings 49.

While in this specification the compressed air is employed it is understood that if desired steam or other suitable gas may be used.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A gas generator, comprising a burner, a mixing chamber connected to said burner, a nipple adjustably mounted on said chamber, a hot air supply pipe connected to said nipple, a gasolene or oil supply pipe formed interiorly of said gasolene pipe, a shaft extending longitudinally within said gasolene pipe and having threaded engagement with the rear portion of said gasolene and air pipe casing, a truncated conical valve head secured to said shaft for regulating the flow of gasolene or oil to the mixing chamber, said nipple being adapted for adjustment to regulate the hot air supply to the mixing chamber, an auxiliary air supply member mounted on said mixing chamber, a double truncated screen member disposed within said mixing chamber for breaking up the molecules of air and gasolene introduced

therein, and means whereby the air is heated prior to same entering the mixing chamber.

2. A gas generator comprising a burner, a mixing chamber connected to said burner, 5 a nipple adjustably mounted on said chamber, a gasolene supply pipe, a hot air supply pipe connected to said nipple, a fuel supply pipe formed interiorly of said gasolene supply pipe, a shaft extending longi- 10 tudinally within said gasolene pipe and having threaded engagement with the rear portion of the said gasolene and air pipe casing, a truncated conical valve head secured to said shaft for regulating the flow

of gasolene or oil to the mixing chamber, 15 said nipple being adapted for adjustment to regulate the hot air supply to the mixing chamber, and an auxiliary air supply member mounted on said mixing chamber and means within the mixing chamber for break- 20 ing up the molecules of air and gasolene introduced therein, and means whereby the air is heated prior to its entrance to the mixing chamber.

In witness whereof I have hereunto set 25 my hand.

VICTOR AUGER.