

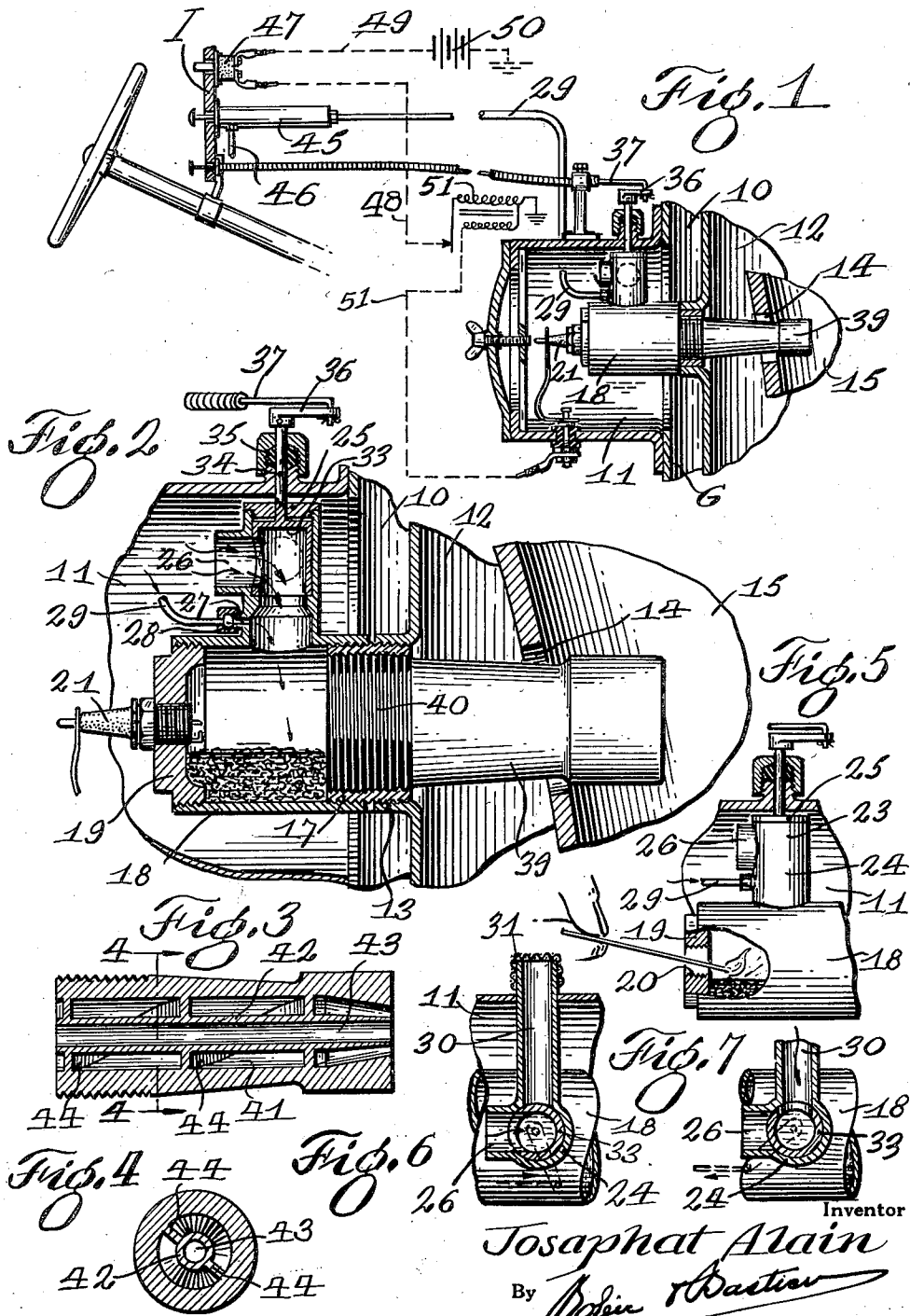
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IGNITION APPARATUS

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IGNITION APPARATUS

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1 Claim. (Cl. 158—28)

The present invention relates to improvements in ignition apparatus and more particularly to apparatus for igniting the fuel of gas generators and the like.

An object of the invention is the provision of ignition apparatus of generally improved construction.

Another object of the invention is the provision of an ignition apparatus which is designed to quickly and effectively ignite fuel.

A further object of the invention is the provision of ignition apparatus which is safe, convenient and reliable in operation.

Still another object of the invention is the provision of ignition apparatus of the aforesaid character which is relatively simple and inexpensive in construction.

Other objects and advantages of the invention will become apparent as the description progresses.

In the accompanying drawing forming a part of this specification and in which like reference characters are employed to designate corresponding parts throughout the same:

Figure 1 is a side elevational view of the improved ignition apparatus operatively connected with part of a generator,

Figure 2 is a sectional view through the said ignition apparatus,

Figure 3 is a longitudinal section through the nozzle of the apparatus,

Figure 4 is a transverse section taken on the line 4—4 of Figure 3,

Figure 5 is a fragmentary elevational view of the ignition apparatus showing one manner in which the same may be ignited,

Figure 6 is a section taken on the line 6—6 of Figure 5 showing the control valve in one position, and

Figure 7 is a similar view showing the valve in another position.

Referring to the drawing, wherein for the purpose of illustration is shown a preferred embodiment of the invention, G generally designates part of a generator, of the type wherein fuel such as charcoal, wood or the like is employed for generating gas to be used on automobiles and like vehicles. To the shell 10 of the generator G is connected a cylindrical laterally projecting housing 11 mounted so that its inner end registers with an opening in the shell wall. An inner structure 12 of the generator is provided with an opening about which is formed an interiorly threaded flange 13, in the present example disposed concentrically with the housing 11, and

with an opening 14 providing an inlet to a fire-chamber 15.

Within the flange 13 is fitted an exteriorly and interiorly threaded connecting sleeve 17 extending outwardly beyond the edge of the flange so as to engage the inner threaded end of a cylindrical shell 18. This shell is arranged horizontally in the generator housing 11 and forms the body of the ignition apparatus, the outer end being interiorly threaded to engage a removable end cover plug 19. At its centre the plug 19 is formed with an interiorly threaded aperture 20 designed to engage the threaded shank of a conventional spark plug 21.

In registration with an outlet in the intermediate part of the top wall of the body shell 18 is formed a right angular fitting 23 having a tubular section 24 normally closed at the outer end by a threaded cap 25 and formed at one side with a right angular branch 26 providing an auxiliary section connecting with the main section. Adjacent its inner end the section 24 is formed with a relatively small inlet port 27 preferably formed with an exteriorly threaded boss designed for connection with a coupling 28 for connecting a fuel feed tube 29 with the inlet. At right angles to the branch section 26 the main section 24 is formed with a second relatively long branch section 30 arranged to extend laterally through the side wall of the housing 11 and preferably having its exterior open end covered by a fine-mesh screen 31.

In the upstanding main section of the fitting 23 is mounted a hollow rotary valve 33 having a port in the bottom communicating with the passage in the section 24 and having a side port which may be disposed to register with either of the branches 26 or 30. To the top closed end of the valve 33 is connected a stem 34 extending through a suitable opening in the top cap 25 and through a bore in the top of the housing. This bore is maintained in tightly closed condition by a stuffing-box 35. On the outer end of the stem is secured a crank arm 36 to the outer end portion of which is connected one extremity of an operating rod or wire 37.

The inner open end portion of the body shell 18 is in co-operative relation with an inwardly extending nozzle member 39 having an exteriorly threaded inner end portion 40 shaped to engage the interior of the sleeve 17. This nozzle projects through the aperture 14 of the inner structure of the generator so that the discharge end protrudes into the fire-chamber 15. The interior of the nozzle is shaped to provide a longi-

tudinal through bore 41 having a diminishing taper at the discharge end. Within the bore 41 is provided a concentrically disposed tube 42 having a bore 43 of uniform cross-section throughout its length. About the tube 42, in the bore 41, are formed double helical ribs 44 designed to effect a vortex motion of the fluid at the discharge end of the nozzle.

The valve operating element 37 may be readily extended to an instrument board I of a vehicle to be operated by plunger action therefrom. Likewise, the fuel feed line 29 may make connection with a valve controlled fitting 45 to which is joined a conduit 46 for supplying fuel from the vehicle tank. Adjacent the fitting 45 may be mounted an electric switch 47, of preferred construction, connected in series with conductors 48 and 49 making an electric circuit through a battery 50, the vibrating high-tension coil 51 and the spark plug 21, connected to the high tension terminal 52 of the coil.

To operate the apparatus, for igniting fuel in a gas generator or similar device, the fitting 45 is adjusted so that its valve makes open connection between the supply line 46 and the fuel feed line 29 to supply fuel into the chamber of the body 18. The extension element 37 is also adjusted to dispose the inlet aperture of the valve 33 in registration with either of the inlet branches 26 or 30 of the fitting 23 so as to admit air into the body chamber where it is admixed with the fuel, which is an inflammable fluid preferably of a volatile nature such as gasoline, to form a highly combustible fuel charge in the chamber of the body. Upon operation of the switch 47 the spark plug 21 is energized to create a spark in the ignition chamber to ignite the charge therein and to project a flame through the nozzle and into the combustion chamber of the generator to effectively ignite the fuel in the latter. As shown to advantage at Figure 2 a mass of packing, such as asbestos or other non-inflammable material, may be deposited in the bottom of the ignition

chamber in the body 18 to receive the fluid fuel fed into this chamber. The branch inlets 26 and 30 of the air inlet fitting 23 enable introduction of air from within the generator housing 30 which, during operation of the generator will become somewhat heated, or from the exterior of the said housing, as illustrated at Figure 6, in accordance with the particular operating conditions. Where circumstances may require or render more convenient the ignition charge in the body shell 18 may be ignited by a taper or match inserted through the aperture 20 in the end cover 19, as shown at Figure 5.

This construction provides a compact, highly efficient and conveniently operable ignition apparatus which, while especially adapted for vehicle-attached gas generators, is also applicable to various forms of generators, furnaces and like structures in which fuel is required to be ignited.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same, and that various changes as to the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:

In an ignition apparatus, a body shell forming a cylindrical ignition chamber, an angular inlet attached to the wall of the shell intermediate the ends for admitting air into the chamber, a rotary valve mounted in the inlet for regulating the admission of air, a fuel inlet connecting with a conduit for feeding ignition fuel into the chamber, an elongated nozzle attached to one end of the chamber, the said nozzle having ribs formed therein to impart a whirling motion to fluid passing through the bore thereof, and a sparking device mounted in the opposite end of the chamber for selectively igniting the fluid charge in the ignition chamber.

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