

Feb. 12, 1957

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2,781,086

LIGHTER TORCH ASSEMBLY FOR A HEATER OF THE VAPOR GENERATING TYPE

Filed Aug. 25, 1954

3 Sheets-Sheet 1

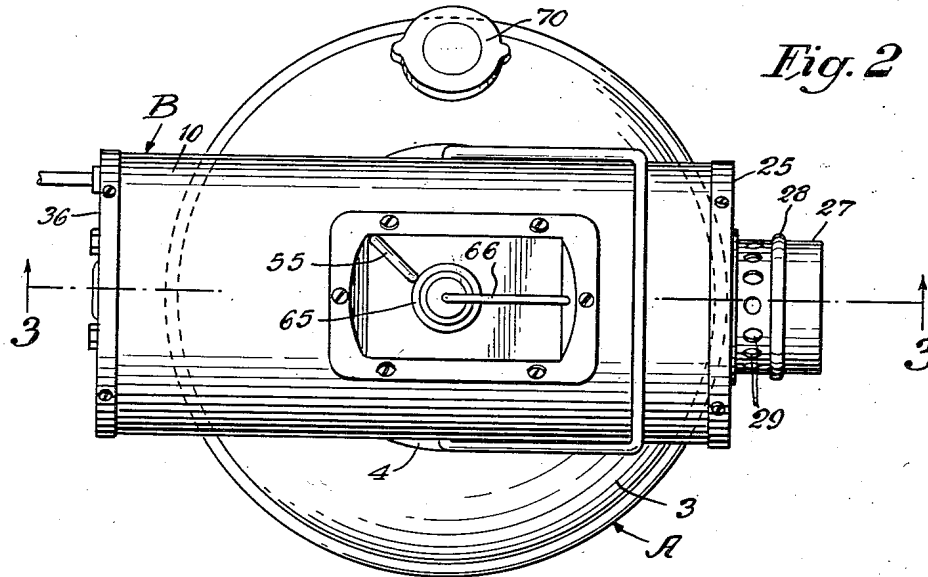


Fig. 2

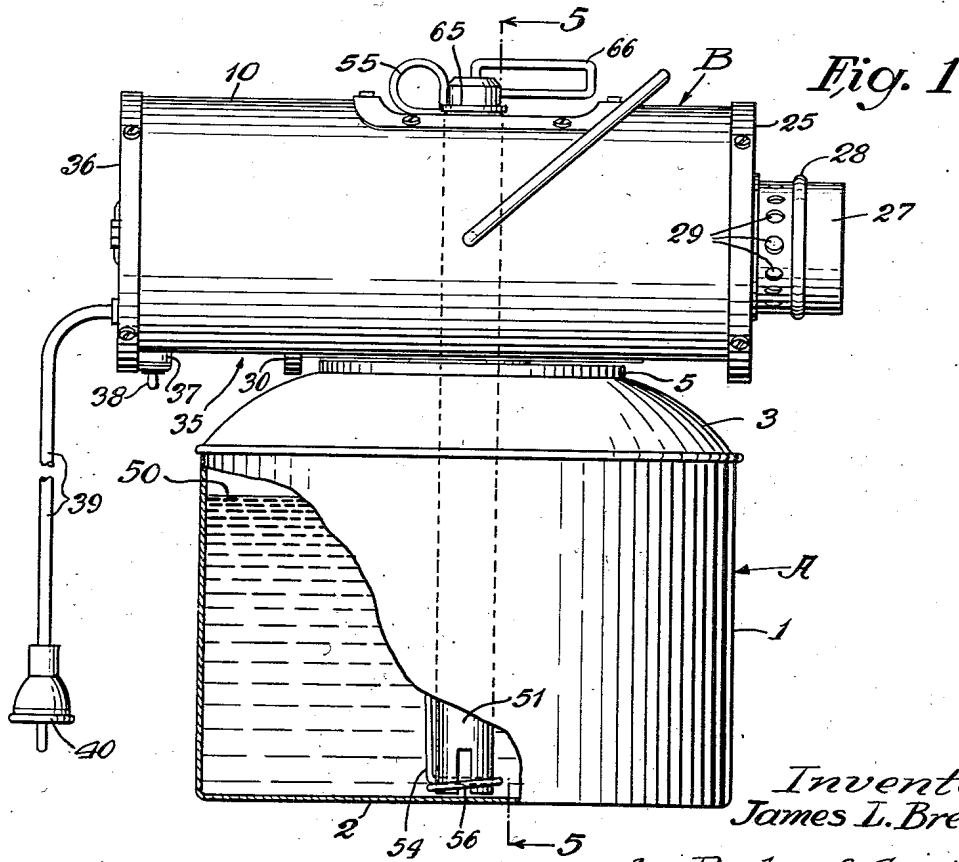


Fig. 1

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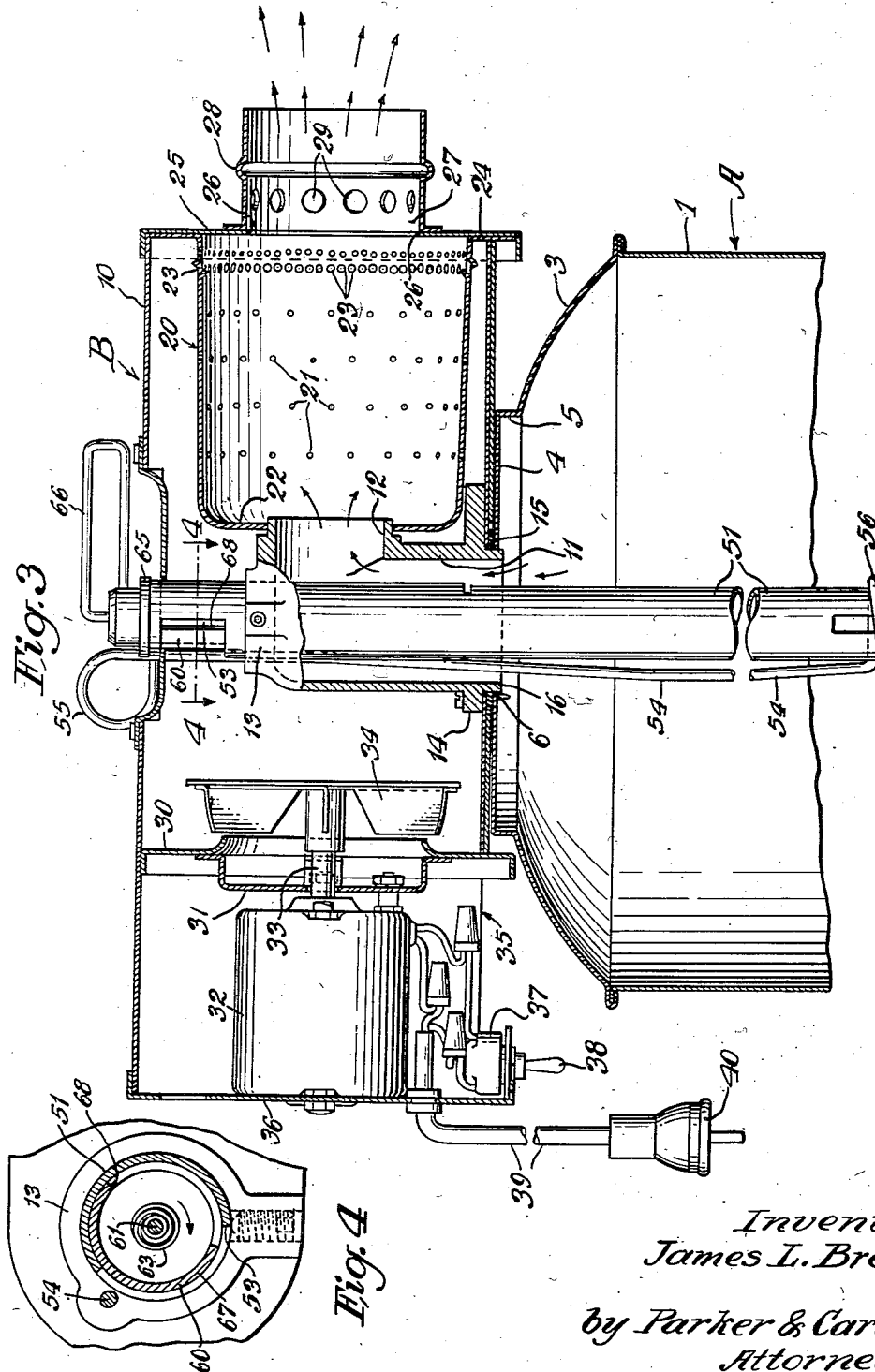
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3 Sheets-Sheet 3

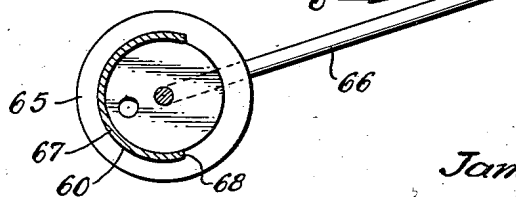
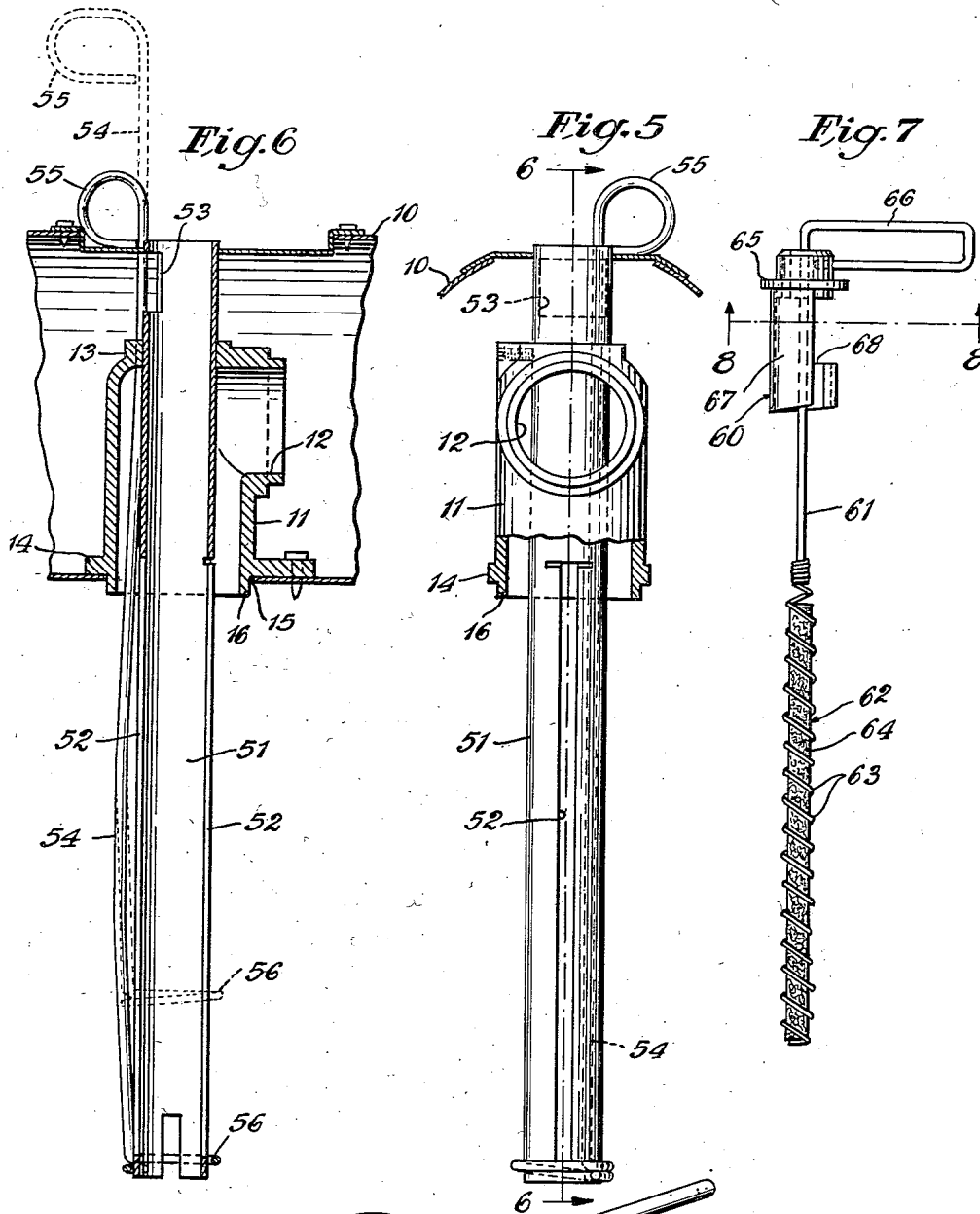


Fig. 8

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LIGHTER TORCH ASSEMBLY FOR A HEATER OF THE VAPOR GENERATING TYPE

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Application August 25, 1954, Serial No. 452,075

3 Claims. (Cl. 158—10)

My invention relates to an improvement in lighter torch assemblies in blow torches or burners.

A major purpose is to provide a flexible lighter torch assembly effective to protect the hand when the lighter torch is inserted in the air tube of the preheater, and adapted thereafter to initiate combustion within such tube.

Another purpose is to provide such a torch in which the flame delivery may be readily adjusted.

Another purpose of the present invention is the provision of a lighting assembly for burners of the vapor generating type wherein a manually actuated lighter torch is employed to both ignite the combustible mixture and to regulate the combustion thereafter.

Other purposes will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings wherein:

Figure 1 is a side elevation of an embodiment of my invention, with parts broken away and parts in section;

Figure 2 is a plan view of the structure of Figure 1;

Figure 3 is a section on the line 3—3 of Figure 2, on a somewhat enlarged scale;

Figure 4 is a section on a still further enlarged scale, on the line 4—4 of Figure 3;

Figure 5 is a section, on an enlarged scale, on the line 5—5 of Figure 1;

Figure 6 is a section on the line 6—6 of Figure 5, with parts omitted;

Figure 7 is a detail; and

Figure 8 is a section on the line 8—8 of Figure 7.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings, A generally indicates a base in the form of a fuel tank. The base may include a circumferential and generally cylindrical side wall 1, a bottom wall 2, and a top wall 3, the top wall being shown as upwardly domed, as in Figures 1 and 3, and having a flat inner portion 4 connected to the domed portion by a circumferential cylindrical wall portion 5. The flat top portion 4 is centrally apertured as at 6.

Mounted upon the base thus formed is a burner assembly generally indicated as B. It includes a horizontally axised, generally cylindrical shroud side wall 10 within which I illustrate a generally vertically axised fitting or tube 11 having a side branch outlet 12, an apertured top wall 13, and an outwardly extending flange 14 in the bottom thereof. The side wall 10 is apertured as at 15 to permit the lower flange 16 of the passage member 11 to extend therethrough. The interior of the base A is in communication, through the member 11 and the side branch 12, with a burner pot generally indicated at 20. The burner pot is in the form of a circumferential wall provided with a plurality of primary air inlets 21, circumferentially spaced thereabout, and located at various distances from the ends of the pot. The pot has an inner end wall 22 with a central aperture through which the flanged end of the member 12 extends. Thus the interior

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of the burner pot is positioned to receive vaporized fuel generated in and rising from the base or tank A in the direction of the arrows of Figure 3. The pot 20 is also provided with secondary air inlets 23 arranged adjacent the end of the pot. The pot may be outwardly flanged at its end, as at 24, and an outer closure ring 25 is provided which partially closes the end of the pot and serves as a circumferential baffle. The ring or end closure 25 is centrally apertured, as at 26, the aperture being surrounded by a tubular structure 27 having a circumferential reinforcing or stiffening flange 28 and a plurality of inlets 29 through which outside atmospheric air may inwardly flow.

Adjacent the opposite end of the circumferential wall 10 of the burner unit B, I position an intermediate partition 30 having a support 31 through which a motor shaft 33 extends from the motor 32. The motor shaft carries a suitable fan structure generally indicated at 34. It will be understood that, in response to rotation of the motor 32, the fan 34 is rotated, and draws air upwardly through an aperture 35 in a lower portion of the wall 10. Thus air is drawn from outside the housing or wall 10, is directed through the central aperture of the intermediate partition 30, and is delivered about the pot side wall 20, entering the interior of the pot through the primary air inlet apertures 21 and the secondary air inlet apertures 23. The outer end of the motor 32 may be supported in any suitable end partition or closure 36. 37 is any suitable switch assembly, including the manually operable switch handle or actuating element 38. 39 is a suitable flexible cord ending in any suitable plug 40 which may be connected to any suitable source of supply of electric current.

It will be understood that a suitable supply of volatile liquid fuel is poured into the base or tank A, as shown at 50 in Figure 1. I may provide a removable filling cap 70. During the operation of the burner the liquid fuel is vaporized by an initial combustion in the tank A, and the vaporized fuel, with some air, but forming a rich and not fully combustible mixture, flows through the fitting 11, 12, into the interior of the burner pot 20. It there receives air through the primary inlets 21 and through the secondary inlets 23, and burns at and beyond the flame discharge tube 27.

To vaporize and ignite the fuel, and to control the delivery of the vaporized fuel to the interior of the burner pot, I provide the following lighter torch assembly: 51 indicates a fixed air inlet tube, open at top and bottom and slotted along the sides, as at 52. It extends downwardly through the flange 13, and has an upper air inlet 53. It will be understood that air delivered by the fan 34 may pass through the air inlet 53, and flow downwardly through the tube 51 and outwardly through the slots 52, into the interior of the tank A. 54 indicates a cleaner rod with an outside handle or loop 55 and a bottom loop 56 surrounding the exterior of the tube 51. I removably insert into the tube 51 the torch structure generally shown in Figure 7. It includes an upper fitting 60 which, as shown in Figure 5, is rotatably received in the upper end of the air tube 51. A downward extension or rod 61 flexibly carries any suitable torch member 62, shown as a coil of wire 63 surrounding a wick 64. The torch fitting, as a whole, is supported at its upper end by a closure flange 65 which, in use, rests upon the upper edge of the top end of the tube 51. It may be rotated, for example, by any suitable exterior handle 66. It includes a valve or shutter portion 67 cut away as at 68, whereby, when the torch fitting is rotated, the member 67 varies the effective cross-section of the aperture 53 through which air from the fan 34 passes into the interior of the tube 51. The top closure flange 65 prevents the outward escape of air from the end of the tube 51. Any suitable flame inspection aperture may be provided.

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It will be realized that, whereas, I have described and illustrated a practical and operative device, nevertheless many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of my invention as defined in the following claims.

The use and operation of the invention are as follows:

I illustrate herein a general burner of the type in which a substantial supply of liquid fuel may be carried by the base or tank A. In order to generate the initial vaporized fuel or fuel mixture I supply air downwardly through the air tube 51 and about the torch structure 62. In response to the heat of combustion of the torch 62, the liquid fuel of the body 50 is vaporized and flows upwardly and outwardly in the direction of the arrows of Figure 3; into the interior of the burner pot 20. When the plug 40 is plugged into any suitable electric supply system the motor 32 is energized, and delivers air about the exterior of the pot 20 and through the primary and secondary air inlets 21 and 23. The result is to mix with the rich mixture of vaporized fuel a supply of air effective to produce a readily and completely combustible mixture. In response to the delivery of air by the fan 34 the mixture, burning in the burner pot 20, is delivered as a directed flame through and well beyond the end of the sleeve 27. Atmospheric air is drawn inwardly through the apertures 29, and the combustion is substantially complete, with a minimum wastage or production of free carbon.

In initiating the operation of the burner, the operator normally would not put the lighted torch into the container when the air pressure is operating. On the contrary, the ignited torch is first inserted into the container, with the torch portion in the tube 51, and the generation of vaporized fuel begins. Thereafter, the motor can be energized, for example, by the switch 38, and the rich mixture generated in the tank A and delivered to the interior of the burner pot receives an adequate air supply, and is "blown" out from the tube 27 as a blow torch jet. The operator, by rotating the handle 66, can control the aperture 53, and thus control the amount of air supplied about the torch.

By providing a flexible torch the operator can insert the wick into the air duct of the preheater while maintaining his hand at a position laterally to one side of

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the upper end of the air duct. When combustion is initiated into the fuel tank the cap carried by the torch is then moved into closing relation to the upper portion of the air duct. This is accomplished as the torch assembly is moved downwardly through the air duct.

I claim:

1. A lighter torch assembly for use with a heater of the vapor generating type, said assembly including a generally upright air duct adapted to extend through a burner housing and into a fuel receptacle, said duct having an open upper end, an aperture in the upper portion of the duct to admit air to the interior of the duct, an elongated member having a handle at the upper end thereof and a wick carried at the lower end thereof, said member being removably mounted in said air duct, said air duct having a flame and air outlet aperture in the lower portion thereof, a shutter carried by the upper end of said member and movably positioned by the handle in controlling relation to said aperture in said duct to thereby regulate combustion adjacent the lower end of said duct, and a closure for the open upper end of said air duct operatively associated with the upper end of said member.

2. The structure of claim 1 wherein said shutter and said closure are formed unitarily and said shutter has a partially cylindrical section, said duct having a cylindrical wall adjacent said aperture and slidably engaged by said section.

3. The structure of claim 1 wherein said wick is flexible with relation to the upper end of said member so as to allow movement of the upper portion of said member laterally to one side of said air duct during insertion of said wick in said duct.

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