M. GOLDBERGER.

BLOW TORCH OR FIRE POT.

APPLICATION FILED FEB. 13, 1915.

1,281,345.

Patented Oct. 15, 1918

2 SHEETS—SHEET 1.

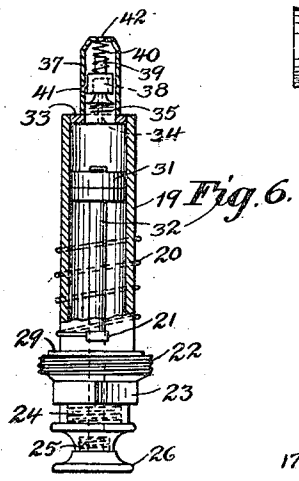


Fig. 6.

Fig. 1.

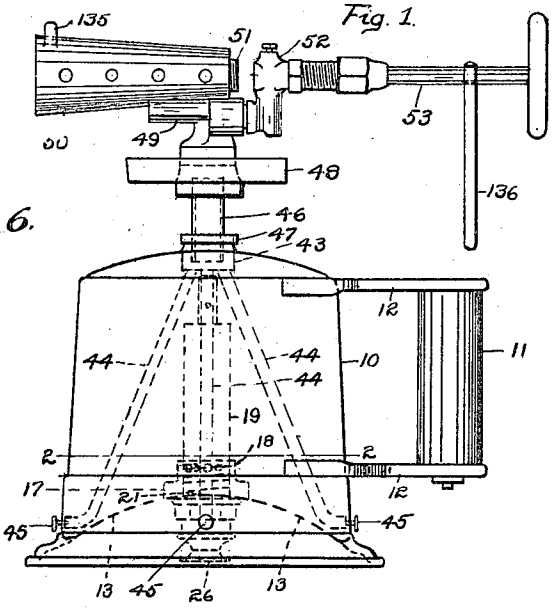


Fig. 4.

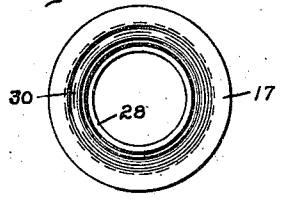


Fig. 7.

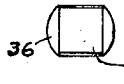


Fig. 8.

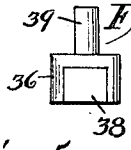
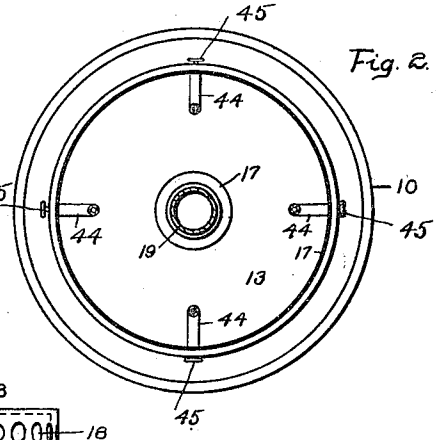


Fig. 2.



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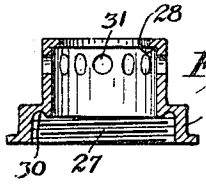
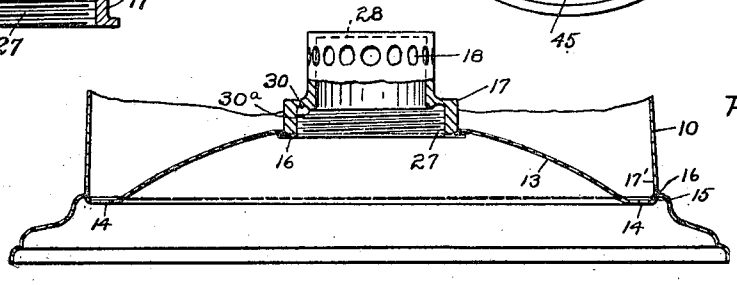


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 9.

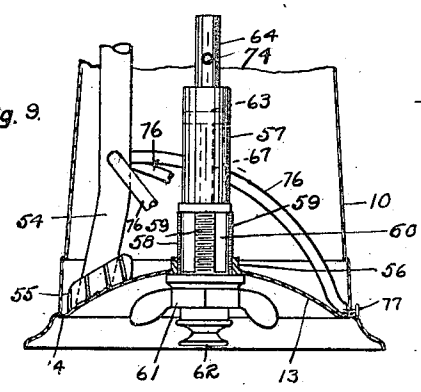


Fig. 10.

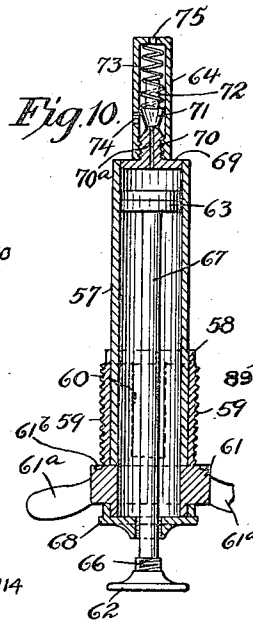


Fig. 12

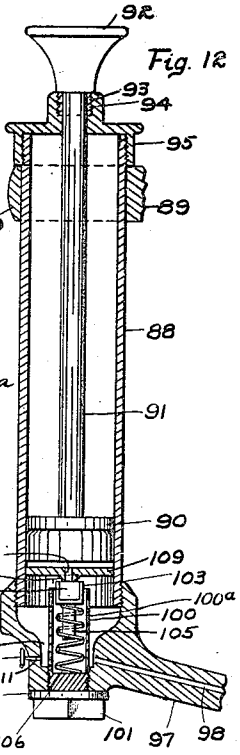


Fig. 11.

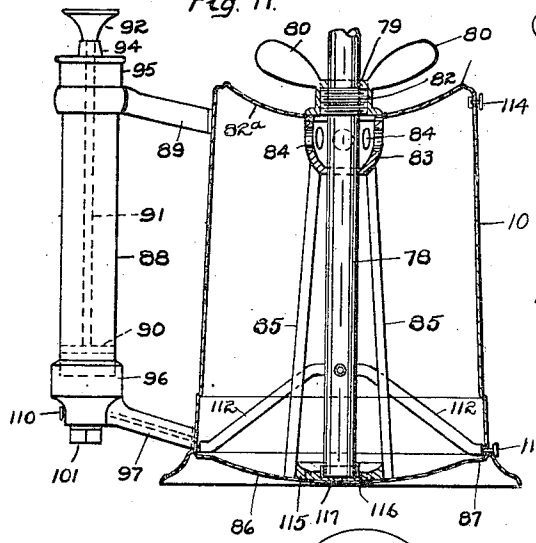


Fig. 13.

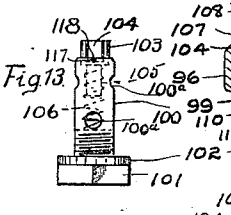


Fig. 14.

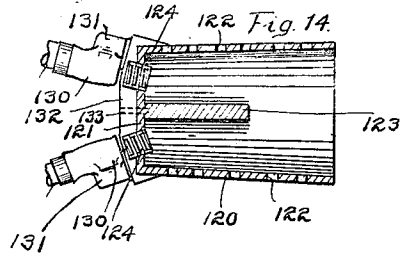
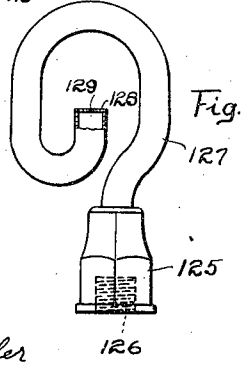


Fig. 15.



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MAURICE GOLDBERGER, OF FORT WAYNE, INDIANA.

BLOW-TORCH OR FIRE-POT.

1,281,345. Specification of Letters Patent. Patented Oct. 15, 1918.

Application filed February 13, 1915. Serial No. 7,940.

To all whom it may concern:

Be it known that I, MAURICE GOLDBERGER, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented new and useful Improvements in Blow-Torches or Fire-Pots, of which the following is a specification.

The invention relates to blow torches or fire pots. In devices of this class it is desirable to have as few openings in the shell of the fuel reservoir as possible in order that there shall be a minimum opportunity for leakage and also that the shell shall be as strong as possible. It is also desirable that the device shall be capable of producing an intense heat and in which the fuel is practically all used up. It is also desirable that the device may be used in various positions—on its side or tilted at various angles without causing the intake of the fuel feed pipe to be elevated above the level of the liquid fuel. It is also desirable that all valves and ducts may be readily accessible for repair or renewal or for cleaning out.

The object of my invention is to provide a simple and efficient device which shall have among others all the advantages and requirements above set forth.

In the drawings I illustrate how my invention may be carried out in practice, in which—

Figure 1 is a side elevational view of a torch constructed according to my invention; Fig. 2 a section on line 2—2 of Fig. 1; Fig. 3 an enlarged sectional view of the lower portion of the reservoir, the feed pipes being omitted; Fig. 4 a plan view of the filling sleeve of the bottom; Fig. 5 a vertical sectional view of the same; Fig. 6 an elevational view of the air pump partly in section; Fig. 7 a plan view of the air controlling valve of the pump; Fig. 8 an elevational view of the same; Fig. 9 a vertical sectional view of a reservoir illustrating a modified form of pump structure; Fig. 10 a vertical sectional view of the pump illustrated in Fig. 9; Fig. 11 a side sectional elevation of a reservoir showing the use of a concave top with filler therein and the air pump serving as a handle; Fig. 12 a vertical sectional view of the pump and connections illustrated in Fig. 11; Fig. 13 an elevational view of the air valve and casing in the pump of Fig. 12; Fig. 14 a horizontal sectional view of a double burner and Fig. 15 a view of a modified form of burner.

Referring to the drawings which illustrate one manner with various modifications of carrying out my invention in practice, 10 indicates a reservoir which may be given any desired shape or contour. A suitable handle 11 is secured to the reservoir by brackets 12. Near the foot of the wall of the reservoir is provided a shoulder 16 which is formed by bending the material inwardly and then upwardly. Upon this shoulder is soldered the upturned edge 15 of bottom 13 (Figs. 3, 9) and of bottom 86 (Fig. 11), the intent being that the inner surface of the upturned portion of the bottom in any case shall merge into or be continuous with the inner surface 17′ of the wall of the reservoir immediately above it. The bottom is concave in Figs. 1, 3 and 9 and convex in Fig. 11 and in each case a channel 14 (Fig. 3) is provided between the curved portion and the wall of the reservoir which is formed by straightening out the portion of the bottom between the curved portion and the reservoir wall. The fuel is bound to drain into the channel in the concave bottom type and assure its collection by the burner feed tubes and in the convex bottom type the fuel will drain into the channel when the fuel is low and the reservoir is tilted in use.

In the center or other suitable point in bottom 13 is provided an opening into which a sleeve 17 is fixed a flange 16 thereon extending onto the outer surface of the bottom about the opening. The sleeve is provided with a number of openings 18 in its wall. Air pump cylinder 19 extends through the sleeve, and a spring 20 is coiled about the cylinder the ends of the spring being secured to blocks 21 which prevent the said ends from catching in openings 18. A threaded collar 22 secured to the cylinder is engaged in threads 27 on sleeve 17, and head 23 which is squared for the engagement of a wrench is without the bottom 13. Cap 24 is threaded onto the projecting end of the cylinder and a grip 26 is secured to piston rod 32 which rod is connected to piston 31. A threaded collar 25 is secured to piston rod 32 or to grip 26 and is adapted to engage threads provided in the interior of cap 24 and serves as a lock for the piston rod in its inner position.

The upper horizontal face of the threaded collar 22 is provided with a lead washer 29 which is adapted to engage in a channel 30 and on bead 30[a] provided in sleeve 17. A shoulder 28 is provided at the upper end of sleeve 17 against which one end of spring 20 abuts the other end of the spring abutting the threaded collar 22 on cylinder 19. The bottom 33 of the cylinder is provided with a lug 35 through both of which is provided a discharge opening 34. A casing 37 is threaded onto the lug and is provided with discharge openings 41 and 42. Within the casing is a valve 36 having a stem 39 and a spring 40 which tends to seat the valve upon the end of the lug. The valve head 36 is bifurcated and within the bifurcations is a piece of cork or other suitable material.

A cup casting 43 is secured to the inner side of the top of the reservoir into which and through an opening in the top extends the lower end of feed pipe or standard 46. A gland or collar 47 is threaded to the pipe and makes tight contact with the top and casting 43 to make the joint fluid tight. Tubes 44 are connected to casting 43 and extend downwardly so that their lower ends lie in channel 14 with their open ends facing the wall of the reservoir. Suitable plugs 45 are threaded through the wall of the reservoir into the ends of the tubes and serve not only to close the ends of the tubes when desired, but by their withdrawal to permit air to escape from the reservoir when fuel has been placed in it.

The burner is connected to the top of pipe 46. It may be any of the well known types as illustrated by the trough 48, generating tube 49, shield 50, inlet 51, valve casing 52 and needle valve and stem 53, or I may substitute the double burner illustrated in Fig. 14 or burner illustrated in Fig. 15, both of which will be described hereinafter.

To fill the reservoir it is only necessary to invert the device and release the pump cylinder from engagement with sleeve 17 whereupon spring 20 will force the pump mechanism upwardly and expose a considerable portion of the open end of the sleeve. One or more of plugs 45 may be removed from the reservoir to permit the ready displacement of the air in the reservoir. Fuel is then poured onto the concaved bottom which operates as a funnel and the fuel passes into the reservoir.

Tubes 44 enable the user to operate the device in most any inclined position even though there may be but a small quantity of fuel in the reservoir. The lowest part of channel 14 is bound to have fuel in it and the tube nearest that low part will draw up the fuel. In case the fuel is so low that any one or more of the lower ends of tubes 44 will be elevated above the level of the fuel when the reservoir is tilted the user merely tightens up the corresponding valves 45 to prevent air from entering those tubes.

In Fig. 9 I illustrate the application of my invention to a device in which the feed pipe is arranged at one side of reservoir 10. An apertured base secures the lower end of pipe 54 to bottom 13, which end extends into channel 14. The lower end of pipe 54 is open, and tubes 76 are connected to the pipe which pipes extend down into the channel at various points, plugs 77 being adapted to close their open ends similarly to plugs 45. In this embodiment of my invention I may use the pump structure illustrated in Fig. 6 or that in Fig. 10. In Fig. 9 I secure to bottom 13 about the opening therein an internally threaded collar 56 in place of sleeve 17. The pump cylinder 57 is provided with a member 58 having cut out portions 60 with threaded portions 59 between them and with a head 61 having finger grips or wings 61[a], a lead washer 61[b] being inserted in a channel provided in the face of the head, which when installed, abuts the outer surface of collar 56. Grip 62, piston rod 67, piston 63, lock 66, cap 68, bottom 69, nipple 70 with the discharge port 70[a], the valve 71, stem 72, spring 73 and the casing 64 with its discharge apertures 74 and 75 are substantially identical to the corresponding parts in Fig. 6. To fill the reservoir the pump structure is unscrewed from its engagement with collar 56 and plugs 77 are removed and the fuel is poured into the funnel formed by the concaved bottom 13 from which it passes through the collar into the reservoir. Any form of burner may be attached to pipe 54. The handle is not shown in Fig. 9, but it will be similar to handle 11 of Fig. 1. If desired pipes 76 may be omitted in the device of Fig. 9. The bottom of pipe 54 will then be open and fuel will enter the pipe through the apertured base 55.

In Fig. 11 I illustrate the use of a convex bottom for the reservoir with channel 87, and a concave top 82[a]. Feed pipe 78 is shown as extended through the center of the top, a threaded member 82 being secured to the pipe upon which is engaged a nut 79, having grip 80, which is adapted to tightly grip the top of sleeve 83 which is provided with apertures 84 and is secured to top 82[a]. Braces 85 are secured both to sleeve 83 and to bottom 86. Ducts 112 are suitably connected to pipe 78 and lead to suitable points in channel 87, the outer ends being controlled by plugs 113 similarly to plugs 45 and 77. A vent controlled by screw plug 114 is provided in or near top 82[a] by which air is permitted to escape as the reservoir is filled with fuel. The lower end of pipe 78 is closed and is supported in casting 115 which is secured to bottom 86 and to braces

85. Foot casting 115 is provided with a socket 116 into which pipe 78 is threaded, a channel 117 being provided in the bottom of the casting which communicates with an aperture in the bottom of the socket above which aperture is the open end of the pipe 78, and which aperture may be controlled by a screw plug 113[a] similar to plug 113. The air pump constitutes the handle in this type. The cylinder 88 is supported on the reservoir by bracket 89 and by bracket 97 which is integral with base 96 of the cylinder. Piston 90 (Fig. 12) is connected to piston rod 91, grip 92 being connected to rod 91, and threaded member 93 on rod 91 being adapted to engage a threaded opening in boss 94 which boss is integral with cap 95 and which cap is threaded on the upper end of cylinder 88.

Bottom 109, having a nipple 107 with opening 108, is secured within the cylinder above its lower edge and base 96 is in threaded engagement with the extended wall of the cylinder. Valve casing 100 is threaded into the lower portion of base 96, the base being chambered above the threaded portion to provide a chamber 99 about a portion of the valve casing. A squared head 101 and lead washer 102 complete the casing. Valve 103 having a cork tip 104 and stem 105 is within the casing and is seated upon nipple 107 by spring 106.

The valve casing 100 is provided with apertures 100[a] in its vertical wall and with notches 118 in its top edge (Fig. 13) for the discharge of air, as the pump is operated, into the interior of base 96 and chamber 99, from which chamber the air passes through duct 98 into the reservoir. Plug 110 closes an opening 111 provided in the wall of base 96 which enables the user after withdrawing the valve 103 and casing 100 to insert a wire into duct 98 for cleaning it out.

In all the illustrations it is apparent that by providing the curved bottom with a channel adjacent the outer wall of the reservoir and by providing the fuel intake ducts in said channel, substantially all the fuel is used up by the burner and the burner may be used at any angle whether little or much fuel is in the reservoir.

The combined pump and plug for the fuel filling opening eliminates one large opening in the reservoir and the concave top with filler plug arranged about the fuel feed pipe eliminates one large opening and furnishes a much easier plug to remove to expose the opening than the ordinary plug.

In Fig. 14 I illustrate a double burner having a shield 120 with end wall 121 and apertures 122 and a vertical partition 123 which extends from the end wall a portion of the length of the shield. Two apertured plugs 124 are threaded into wall 121 in opposite directions so that vapor entering through the plugs will be directed at an angle to the partition. Needle valves 130 control the discharge of vapor into the plugs 124, the valve casings being connected to tubes 131 which are in turn connected to generating member 132 having a partition 133 so that both valves will receive vapor and either one or both may be used. The jets impinge angularly upon the opposite sides of the partition and are by it deflected to the wall of the shield and again deflected by the latter to unite in the forward part of the shield or combustion chamber where the vapor is combusted. In its baffled course through the shield the vapor is mixed with a large proportion of air which is drawn through the openings 120—a much larger proportion than where the jet travels in a straight path through the shank. The result is that the combustion of the mixture is attended with a high heat which is desirable for many purposes. When the double type of burner is used it will be preferable to use a feed pipe formed of heat non-conducting material such as asbestos tubing in order that the heat of the combustion shall not be conducted by the feed pipe into the reservoir.

I may also use the burner illustrated in Fig. 15. This burner is very cheaply constructed as it consists of a swivel union 125 having the internal threads 126 by which the union is connected to the feed pipe. Pipe 127, preferably a copper tube, is connected to the union and is bent into any number of convolutions, the free end being closed by end 128 which is provided with a discharge orifice 129. The convolutions of the pipe are arranged so that the burning fuel will first discharge against a considerable proportion of the pipe to initially vaporize the fuel and later the burning vapor will discharge against the same to continue the vaporization of the fuel. No needle valve is used as it is only necessary to release the air under pressure in the reservoir to stop the flow of the fuel to the burner.

On shield 50 (Fig. 1) I provide an upwardly projecting bifurcated lug 135 which serves as a rest for a soldering iron. Upon stem 53 I provide an elastic member 136 such as soft wire or a chain which, when the iron is placed on the lug may be wound over the rear part of the iron and thereby hold it in place at any desired angle with respect to the axis of the shield.

What I claim is:

1. In combination a reservoir having a curved bottom and having a channel therein adjacent the wall of the reservoir, the reservoir having an opening therein for admitting fuel, an air pump mechanism removably closing the opening, a feed pipe connected to the reservoir and having a plurality of communications with the channel, means to con-

trol the latter communications and a burner connected to the feed pipe.

2. The combination of a reservoir having a funnel-shaped bottom and having an opening in the bottom for the admission of liquid, a pump mechanism removably secured in said opening, a feed pipe connected to the reservoir and a burner connected to the feed pipe.

3. In combination a reservoir, a curved bottom and having an opening in said bottom for admitting fuel, a pump mechanism in threaded engagement with said member and adapted, when partly withdrawn from said engagement, to establish communication between the exterior and interior of the reservoir, a feed pipe connected to the reservoir and a burner connected to the feed pipe.

4. The combination of a reservoir having an opening therein for admitting fuel, an air pump mechanism removably closing the opening, a feed pipe connected to the reservoir and having a plurality of communications with the interior thereof, means to control the latter communications and a burner connected to the feed pipe.

In witness whereof I hereunto subscribe my name in the presence of two witnesses.

MAURICE GOLDBERGER.

Witnesses:

E. M. HULSE,

MARGARETHE TEGEDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."