March 6, 1951 S. C. BRODY 2,544,217

BLOWTORCH

Filed April 28, 1949 3 Sheets-Sheet 1

Fig. 1

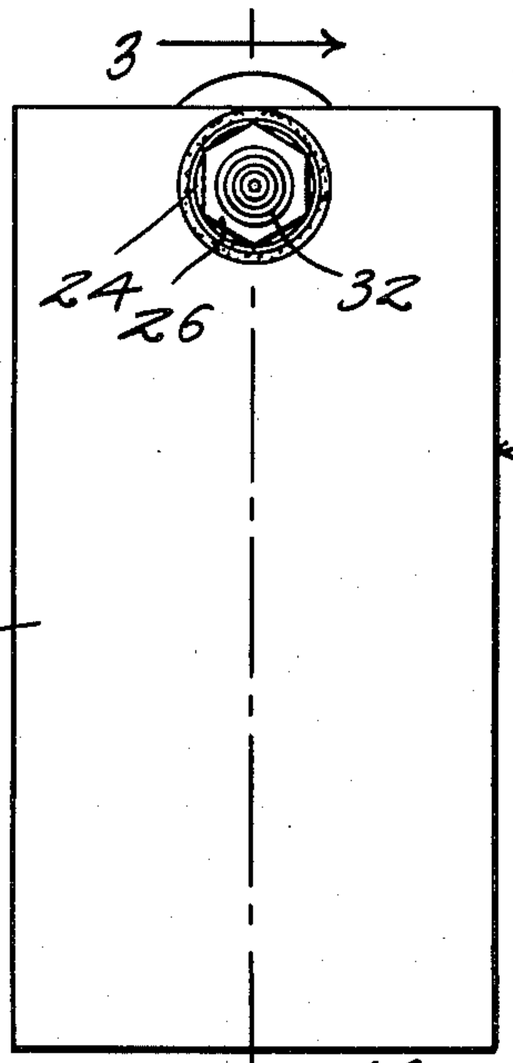


Fig. 2

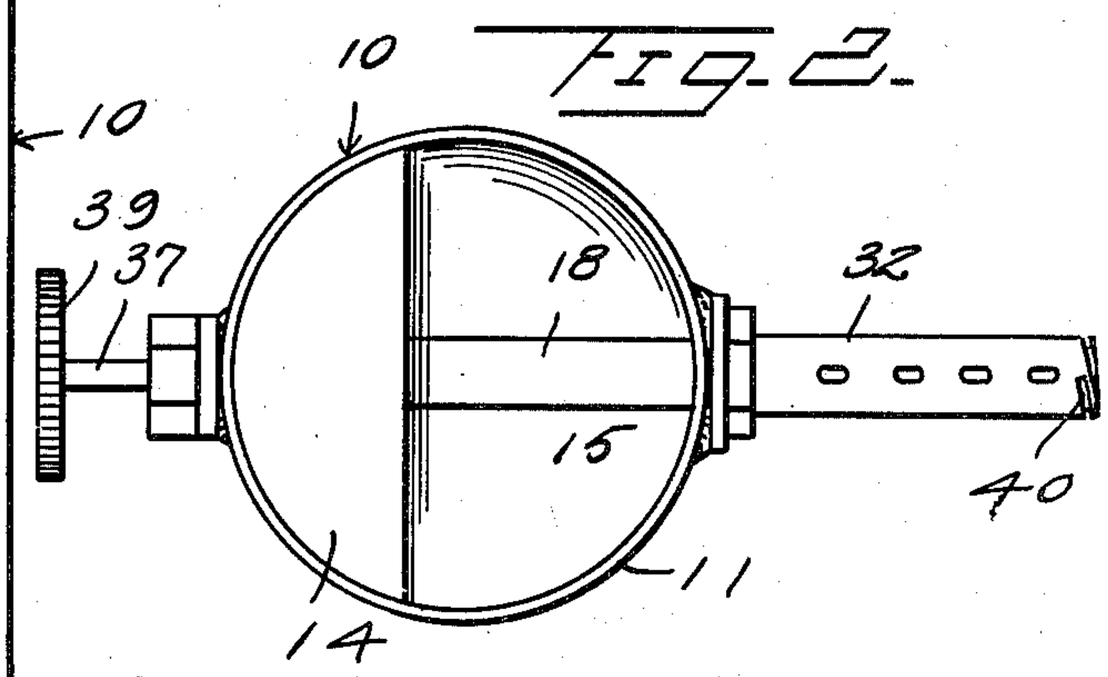
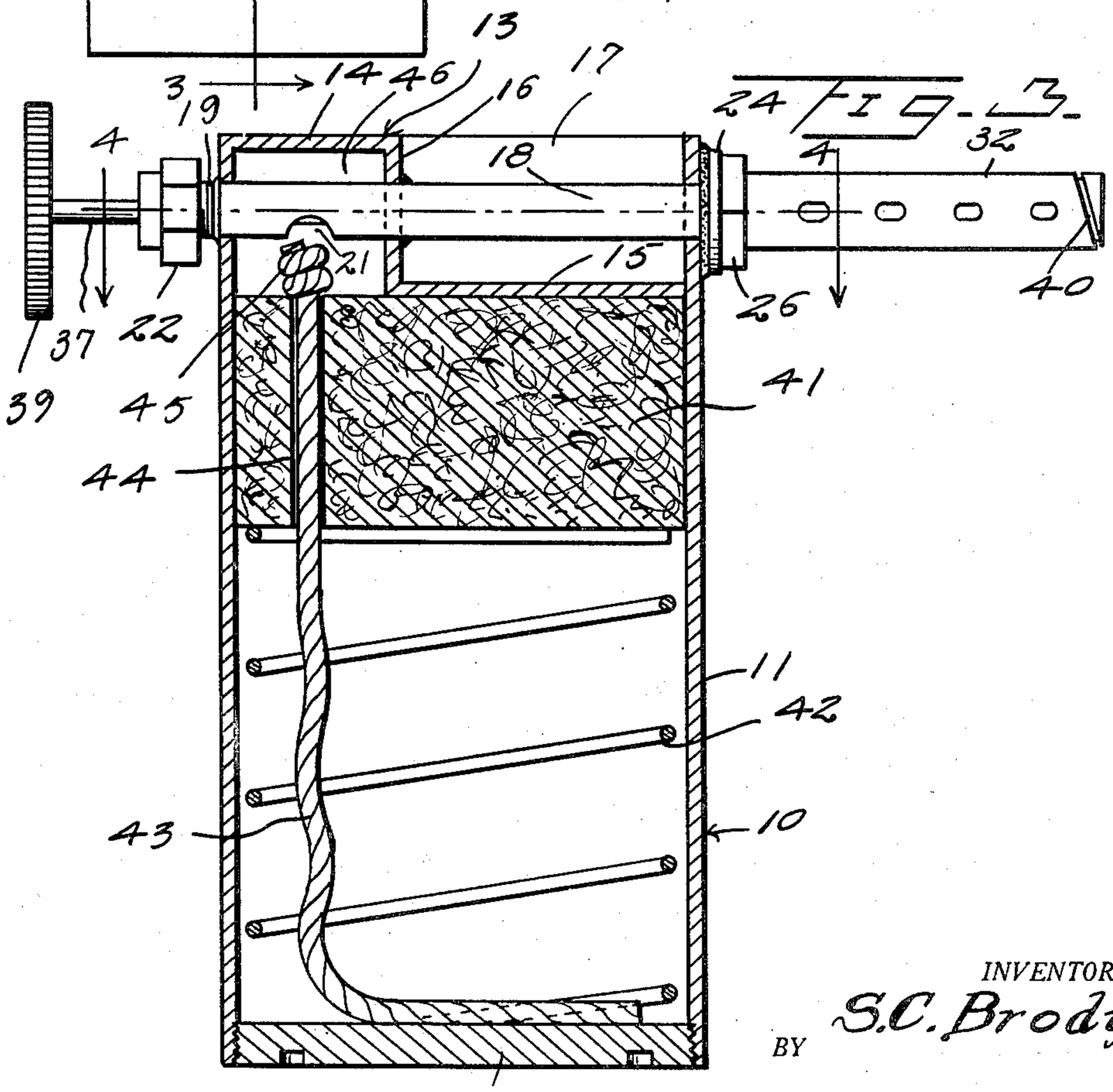


Fig. 3



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March 6, 1951 S. C. BRODY 2,544,217

BLOWTORCH

Filed April 28, 1949 3 Sheets-Sheet 2

Fig. 4.

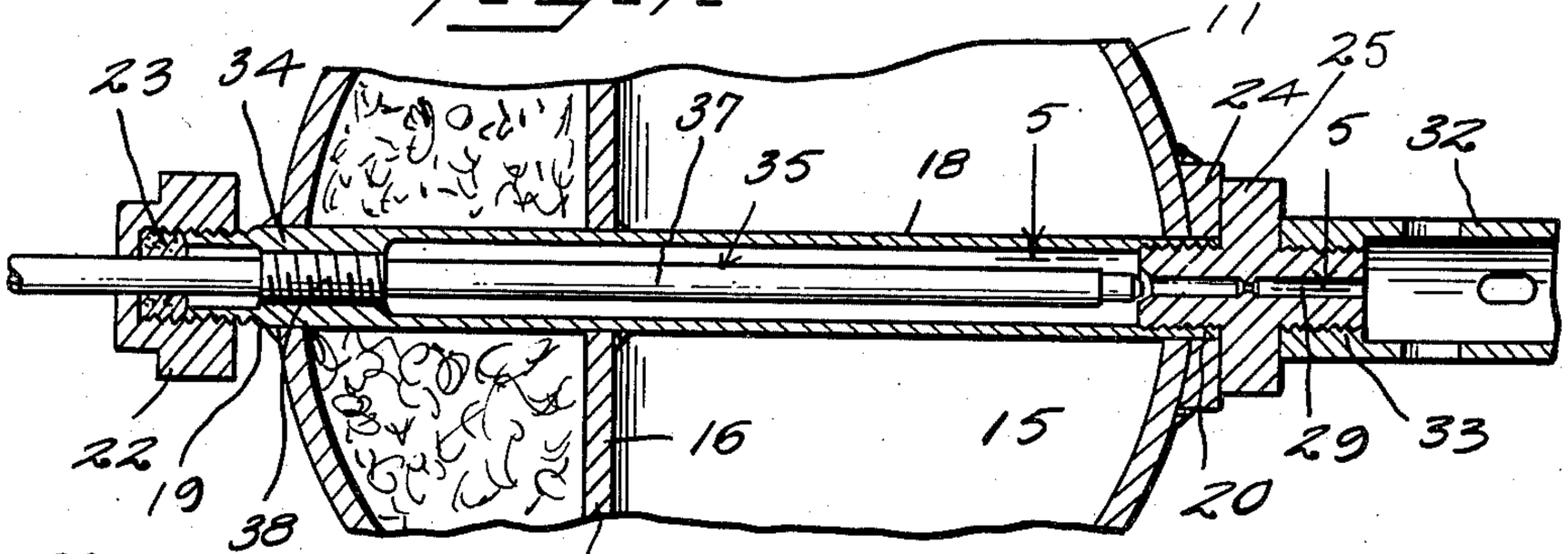


Fig. 6.

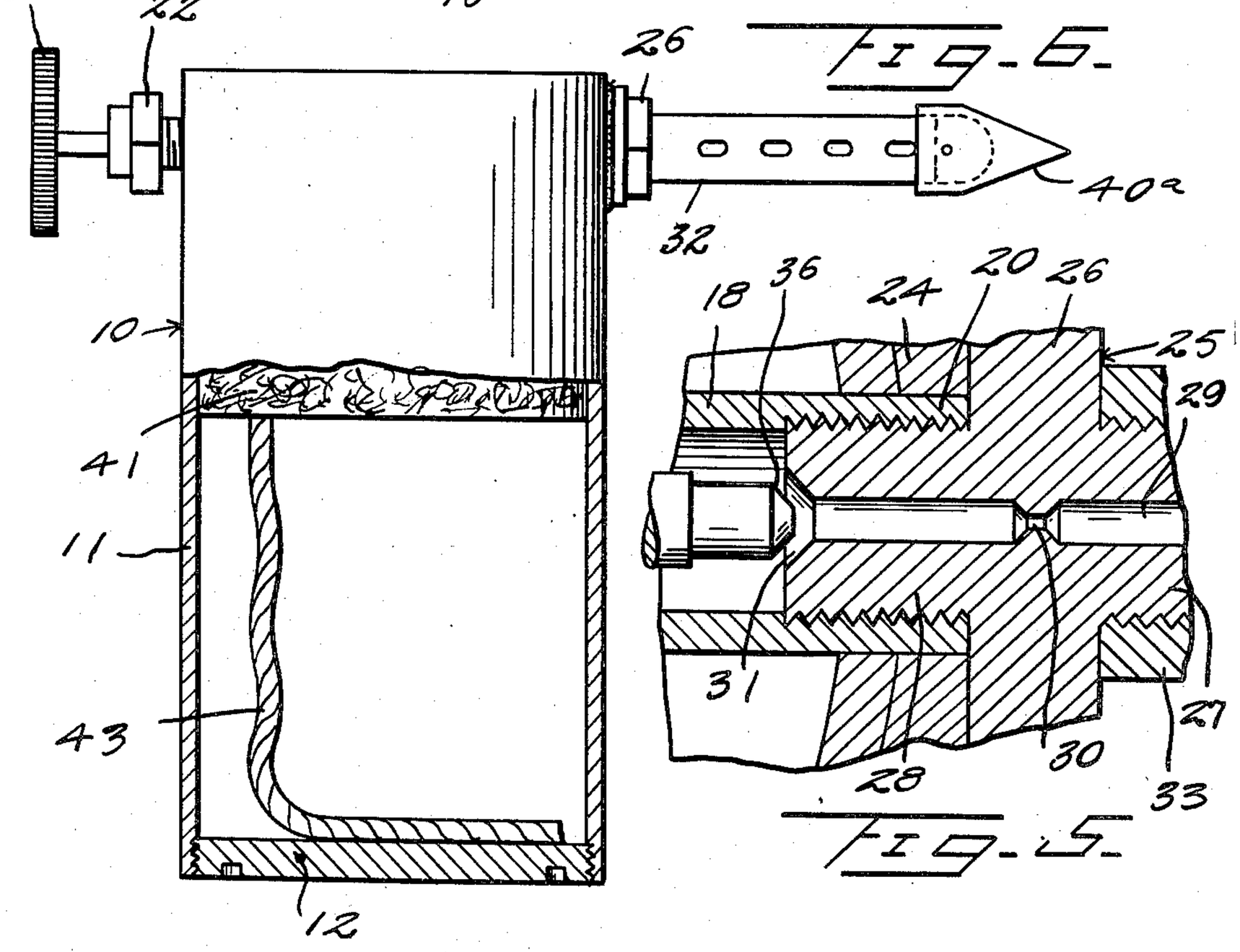
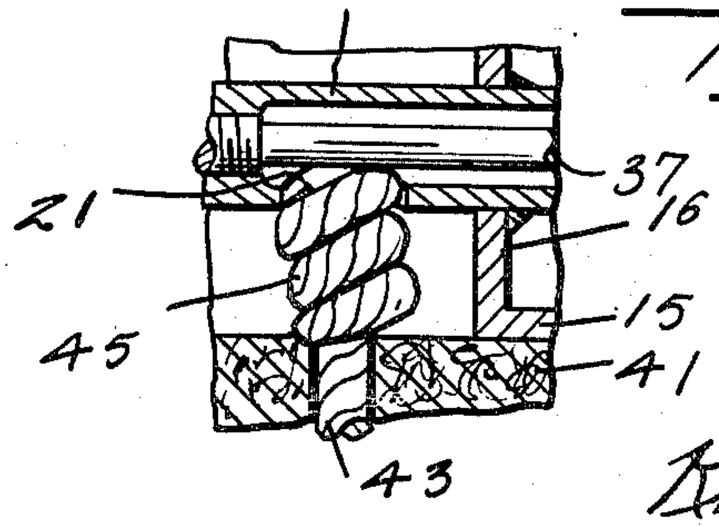


Fig. 7.



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BLOWTORCH

Filed April 28, 1949 3 Sheets-Sheet 3

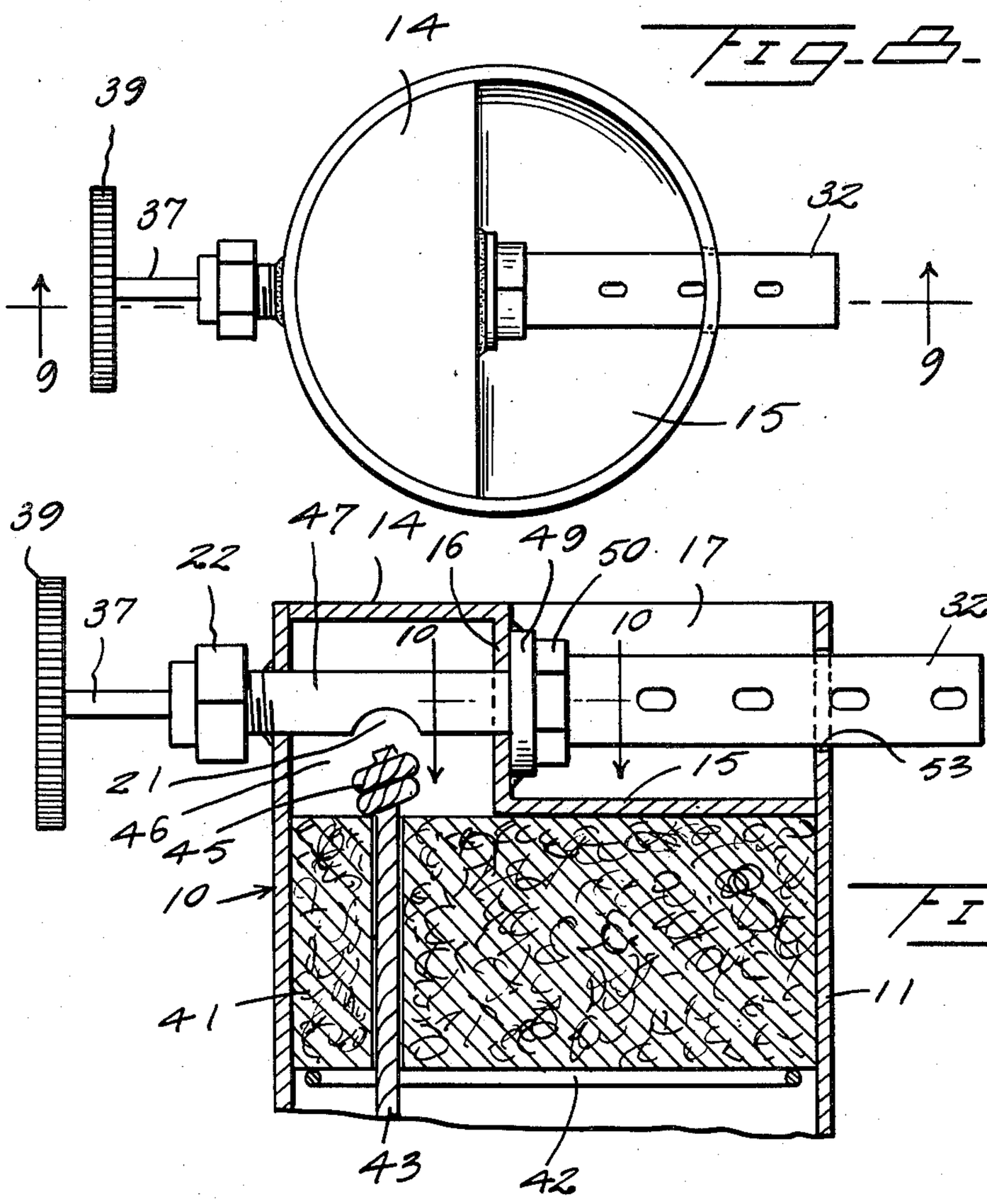

Fig. 8.

Fig. 9.

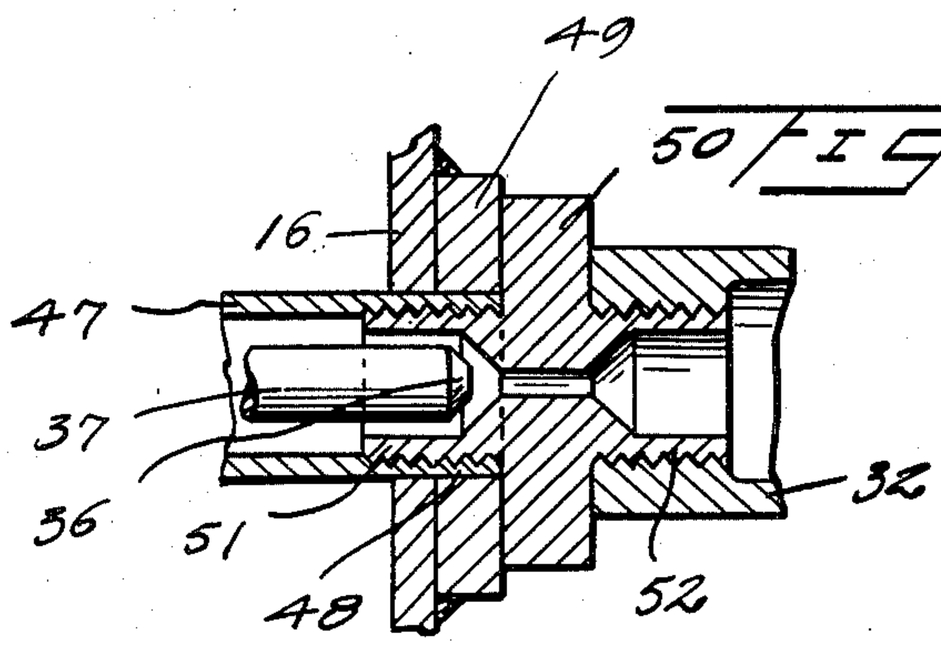

Fig. 10.

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UNITED STATES PATENT OFFICE

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BLOWTORCH

Samuel C. Brody, Cambridge, Mass.

Application April 28, 1949, Serial No. 90,181

14 Claims. (Cl. 158—35)

1

This invention relates generally to automatic blow torches of the self-generating type, and particularly to a torch of this type which produces a blast flame of uniformly great heat intensity.

An object of this invention is to provide a torch of the self generating type in which a high degree of heat transfer is obtained between the combustion tube and the torch casing containing the fuel for the purpose of realizing the optimum vaporization of the raw fuel and the consequent high fuel vapor pressures.

An additional object of this invention is to provide a self generating torch in which the danger of explosion, resulting from the contact of cool raw fuel with the intensely heated portions of the torch casing, is completely eliminated.

It is a further object of this invention to provide a blow torch of the self generating type having a positive control of the flow of fuel vapors to the burner nozzle for the purpose of regulating the size and intensity of the blast flame and also for the complete extinguishment of the flame.

Still another object of this invention is to provide a self-generating torch in which burning and scorching of the wick is completely eliminated, obviating the difficult replacement of scorched wicks and resulting in trouble free operation of the burner nozzle due to the absence of clogging by charred portions of the wick.

A further purpose of this invention is to provide a self-generating torch in which there is direct heat transfer between the combustion tube and the fuel containing casing and particularly the top wall thereof, whereby continuous heating of the fuel in the casing is achieved producing rapid vaporization thereof and the concomitant build-up of uniformly high pressures increasing with continued operation of the torch. The heating of the fuel and the super-heating of the vapor thereof being fostered by the construction of the top wall of the casing and the placement of the barrier in contact therewith.

In order that the many advantages of my invention may be more fully understood and appreciated, reference is made to the accompanying specification and drawings, wherein I describe and illustrate an embodiment of my invention which I have found efficient, economical, and unusually satisfactory in service and well adapted to the demands of low cost commercial manufacture.

In the drawings:

Figure 1 is a front elevation of a blow torch

2

constructed according to an embodiment of my invention,

Figure 2 is a top plan view of the blow torch shown in Figure 1,

Figure 3 is a side elevation in section taken on the line 3—3 of Figure 1,

Figure 4 is an enlarged fragmentary plan view in section taken on the line 4—4 of Figure 3,

Figure 5 is an enlarged detail section taken on the line 5—5 of Figure 4,

Figure 6 is a side elevation partly in section of a modification of my invention,

Figure 7 is a detail fragmentary sectional view of a portion of the device shown in Figure 3 illustrating a possible positioning of the elements thereof,

Figure 8 is a top plan view of a modification of my invention,

Figure 9 is a fragmentary side elevation partly in section taken on the line 9—9 of Figure 8, and

Figure 10 is a fragmentary sectional view taken on the line 10—10 of Figure 9.

Referring to Figures 1 through 5 of the drawings, I have there illustrated a preferred embodiment of my invention. The blow torch includes a fuel reservoir or casing 10 having a cylindrical side wall 11. The bottom of the side wall 11 is formed with internal threads for removably receiving the bottom closure 12 which is in the shape of a disc and has threads formed on the perimeter thereof for engaging in the bottom of the side wall. The top end of the side wall is sealed by a circular stepped top wall 13 which is formed with a raised horizontal portion 14, a depressed horizontal portion 15, and a connecting vertical portion 16. The raised portion 14 is positioned flush with the top end of the side wall 11 and the depressed portion 15 extends downwardly into the casing 10 to provide, with the side wall 11, a priming chamber or well 17. The edges of the top wall 13 are welded, brazed, or soldered to the side wall 11 to effectively seal the interior of the casing 10. A horizontally disposed pressure generating tube and valve stem housing 18 extends diametrically across the top of the casing 10, positioned below the raised top wall portion 14 and above the depressed top wall 15. The tube 18 extends through the top wall portion 16 at right angles thereto and is welded, brazed, or soldered therein. One end 19 of the tube 18 extends rearwardly out through the side wall 11, and the other end 20 projects forwardly out of the opposite side of the side wall 11. The ends 19 and 20 are welded, brazed, or soldered to the side wall 11 at the intersection thereof in order

to make the casing 10 both liquid and gas tight. An opening 21 is formed in the bottom of the tube 18 within that portion which is contained by the raised top wall portion 14, the vertical portion 16, and the side wall 11. The end 19 of the valve stem housing and pressure generating tube 18 is threaded to receive a gland nut 22 which with the packing 23 seals this end of the tube 18. A bushing 24 welded to the side wall 11 surrounds the end 20 of the tube 18 and is flush with the forward end thereof to provide a relatively large seat for the nozzle member 25. The nozzle member 25 has a body portion 26 and oppositely projecting threaded lugs 27 and 28. A longitudinal bore 29 extends through the nozzle member 25 and has a reduced orifice 30 substantially in the center thereof. The end of the bore 29 in the lug 28 is countersunk to provide a valve seat 31. The lug 28 of the nozzle member 25 is threadedly received by the end 20 of the tube 18 with the nozzle member body portion 26 abutting against the bushing 24 and the end of the tube 18 to provide intimate contact for the transfer of heat. A combustion tube 32, having a thickened wall portion 33 is threadedly mounted on the lug 27 of the nozzle member 25 with the thickened portion 33 abutting against the nozzle member body 26 to provide a large contact area for heat transfer. The pressure generating tube and valve stem housing 18 has a thickened internally threaded wall portion 34. A valve member 35 is positioned in the tube 18 and has a valve portion 36 for seating against the valve seat 31, a valve stem 37 of lesser diameter than the interior of the tube 18, and a threaded enlarged diameter portion 38 for engagement with the thickened wall portion 34, whereby rotation of the valve stem 37 will cause movement of the valve portion 36 towards or away from the valve seat 31 for seating and unseating respectively. The valve stem 37 projects rearwardly through the packing 23 and gland nut 22 and has an operating knob 39 secured thereon. The outer end of the combustion tube 32 may be formed with thread segments 40 on the outer surface thereof for the attachment of a soldering tip 40*a* as shown in Figure 6. As best seen in Figure 3, a barrier 41, which is of disc shape to tightly conform to the interior contours of the side wall 11, is disposed in the casing 10 with the top surface of the barrier 41 pressed against the underside of the depressed top wall portion 15. A spring member or prop 42 may be interposed between the barrier 41 and the bottom closure 12 for the purpose of constantly urging the barrier 41 against the top wall portion 15. The barrier is formed of a material such as felt or the like which is gas permeable and yet substantially blocks the passage of liquid fuel therethrough. A capillary wick 43 is positioned in the fuel casing 10 and extends upwardly through the passageway 44 formed in the barrier 41. The top end of the wick member 43 is knotted as at 45 to prevent its slipping down into the bottom of the fuel casing. The passageway 44 underlies the opening 21 formed in the pressure generating tube, and the knot 45 may be spaced from the opening 21 as shown in Figure 3, or in contact with the opening 21 substantially filling the same, as seen in Figure 7. In either case the knot 45 will be positioned in the gas chamber 46 formed by the top of the barrier 41, the top wall portions 14 and 16, and the side wall 11. As seen in Figure 6 the spring 42 may be dispensed with and the barrier 41 maintained in place against the top wall portion 15 merely by the frictional engagement of the side edges of the barrier with the side wall 11.

In Figures 8 through 10, I have disclosed a modification of the blow torch above described. In this modification of my invention, a shortened pressure generating tube and valve stem casing 47 is provided. The tube or casing 47 extends through the gas chamber 46, projecting rearwardly through the side wall 11 and forwardly through the vertical portion 16 of the top wall. The forwardly projecting end 48 of the tube or casing 47 is cut short just beyond the wall portion 16. A bushing 49 surrounds the end 48 flush therewith and is welded, brazed or soldered to the face of the wall portion 16. A nozzle member 50 having a threaded inner lug 51 engaging in the end 48 and a threaded outer lug 52 for carrying a combustion tube 32 is positioned against the bushing 49. The combustion tube 32 is mounted on the nozzle member lug 52 and extends forwardly through the opening 53 formed in the side wall 11. As can be readily seen in Figure 9, a substantial length of the combustion tube lies within the priming chamber 17 and therefore overlies the top wall portion 15. The nozzle member 50 is formed with a bore 54 extending longitudinally therethrough having a reduced diameter center portion orifice 55 and an inwardly inclined shoulder 56 between the bore 54 and the orifice portion 55 to provide a valve seat. As is apparent, the valve stem 37 is shortened so as to provide for the desired seating of the valve portion 36 on the valve seat 56.

The operation of my device is as follows: Fuel is admitted to the interior of the casing 10 by inverting the torch and removing the bottom closure 12, the valve 36 being seated to prevent leakage of the fuel. The fuel may be alcohol or any like substance. After the desired quantity of fuel has been poured into the casing or reservoir 10, the closure 12 is replaced and the torch placed in an upright position. A quantity of fuel is then poured into the priming chamber or well 17 and ignited. In the embodiment of my invention illustrated by Figures 1 through 5, the burning priming charge will intensely heat the portion of the tube or casing 18 overlying the top wall portion 15, the top wall portion 15, the top wall portion 16, and the upper end of the side wall 11. The heated tube or casing 18 will transmit heat to the gas chamber 46 and begin the vaporization of the fuel rising in the wick 43. The vaporized fuel will enter the tube 18 through the opening 21 and will be further heated and pressurized as it passes therealong. When the top of the casing is sufficiently heated so that substantial fuel pressure is obtained, the valve 36 is cracked open to allow the vapors to pass through the nozzle orifice 30 into the combustion tube 32. These vapors are then ignited and the normal functioning of the torch has commenced. During this normal functioning, heat from the combustion tube 32 is conducted back through the nozzle member 25 to the bushing 24 and the tube 18 and through these two latter members directly to the side wall and the top wall portion 16. The top wall portions 14 and 15 will be heated by conduction from the portion 16 and the tube 18. It is apparent, therefore, that the top wall 13 and the side wall 11 will be progressively intensely heated as the torch is operated. Fuel rising through the wick 43 will be vaporized as it reaches the knot 45 since the knot 45 is located in the gas chamber which is heated by the top wall portions 14 and 16 and the side

wall 11. As shown in Figure 7, the knot itself may be positioned against the opening 21 in contact with the tube 18 to achieve intense heating of the knot. The barrier 41, as had been noted, is placed against the under side of the top wall portion 15 and tightly fits against the side wall 11, which results in the top surface and the side edges of the barrier being intensely heated. This heating of the barrier provides positive assurance that no liquid fuel will be allowed to come in contact with the heated top wall 13 since it creates a physical and thermal barrier to such contact. The thermal barrier is best explained by assuming that small quantities of the liquid fuel did infiltrate through the barrier. As the liquid fuel passed upwardly it would contact the heated portions of the barrier and be vaporized thereby, so that by the time the intensely heated top wall was reached the entire fuel would be vaporized. This makes it possible to use my torch in any position without the danger of explosion normally attending the contact of liquid fuel with a heated surface. Since fuel which passes through the barrier is vaporized during such transit, the heated barrier also contributes to the vaporization of fuel and increases the pressure at the nozzle thereby increasing the intensity of the flame. Rotation of the valve stem 37 by means of the knob 39 will control the amount of fuel vapor passing through the orifice 30 and thus control the size of the flame in the combustion tube. By completely closing the valve 36 on the seat 31, the flame can be safely extinguished.

In the modification of my invention illustrated by Figures 8 through 10 of the drawings, the depressed top wall portion 15 is directly heated by flames ejected from the combustion air holes commonly formed in the combustion tube. Heat will be carried back to the vertical top wall portion 16 through the nozzle member 50 and the bushing 49 abutting that wall portion. Heat also will be transferred directly to the pressure generating tube and valve stem casing 47 from the combustion tube thus effecting the intense heating of the tube 47 and the gas chamber 46. The side wall 11 will be heated by the combustion tube 32 where it passes therethrough, and by the tube 47 where it projects rearwardly through the side wall 11. The side edges and the top surface of the barrier 41 will therefore be heated in a manner similar to that described with respect to the first embodiment of my invention so as to constitute the barrier both a physical and thermal barrier to the contact of liquid fuel with the intensely heated top wall 13.

The foregoing description and the drawings disclose preferred embodiments of my invention. However, it is apparent that modifications in construction and arrangement may be resorted to without departing from the scope of my invention which is defined in the appended claims.

What I claim is:

1. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a depressed portion and a raised portion, a horizontally extending combined valve housing and pressure generating tube member disposed adjacent the top end of said side wall and having a portion thereof underlying said raised portion in direct heat exchange relation to said top wall, and a gas permeable barrier disposed in said fuel reservoir with the top surface thereof against said depressed portion, whereby when said torch is in operation, heat from said tube member will be transferred through said top wall to said barrier for constituting said barrier a thermal and physical barrier to contact of liquid fuel with said top wall, and whereby said top surface and said raised portion will coact to define a gas chamber.

2. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a depressed portion and a raised portion, a horizontally extending combined valve housing and pressure generating tube member disposed adjacent the top end of said side wall and having a portion thereof underlying said raised portion in direct heat exchange relation to said top wall, a gas admitting opening formed in said underlying portion, a gas permeable barrier disposed in said fuel reservoir with the top surface thereof against said depressed portion, said raised portion and said top surface coacting to define a gas chamber and a wick member extending upwardly through said barrier and having an end thereof terminating in said gas chamber, whereby when said torch is in operation, heat from said combined member will be transferred to said top wall for heating of said barrier, thereby constituting said barrier a thermal and physical barrier to contact of liquid fuel with said top wall, and for heating said gas chamber, thereby effecting vaporization of fuel rising in said wick member.

3. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a depressed portion disposed downwardly from the top end of said side wall and a raised portion disposed flush with said top end, a gas permeable barrier in said fuel reservoir having the top surface thereof positioned against said depressed portion, said top surface of said barrier and said raised portion coacting to provide a gas chamber, a horizontally extending combined valve housing and pressure generating tube member having a portion thereof disposed within and extending across said gas chamber in direct heat exchange relation to said top wall, at least one end of said combined member extending outwardly through said cylindrical side wall, a gas admitting means formed in said combined member portion disposed within said gas chamber, and a wick member in said fuel reservoir extending upwardly through said barrier and having an end thereof disposed in said gas chamber adjacent to said gas admitting means, whereby when said torch is in operation, heat from said combined member will be transferred to said top wall and said side wall for heating said barrier and said gas chamber, thereby constituting said barrier a thermal as well as physical barrier to the contact of liquid fuel with said top wall and effecting the vaporization of fuel rising in said wick member.

4. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a depressed portion disposed downwardly from the top end of said side wall to provide a priming chamber, and a raised portion disposed flush with said top end, a gas permeable barrier in said fuel reservoir having the top surface thereof positioned against said depressed portion, said top surface of said barrier and said raised portion coacting to define a gas chamber, a horizontally extending combined valve housing and pressure generating tube member having a portion thereof disposed within and extending across said gas chamber in direct

heat exchange relation to said top wall, at least one end of said combined member extending outwardly through said side wall, nozzle means carried by one end of said combined member, a combustion tube mounted on said nozzle member in direct heat exchange relation to said side wall, and said combined member, gas admitting means formed in said combined member portion disposed in said gas chamber, and a wick member in said fuel reservoir extending upwardly through said barrier and having an end thereof disposed in said gas chamber adjacent to said gas admitting means, whereby when said torch is in operation, heat from said combustion tube will be transferred through said side wall and said combined member to said top wall and said gas chamber for heating said barrier and said wick end, thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and effecting the vaporization of fuel rising in said wick member.

5. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a depressed portion disposed downwardly from the top end of said side wall to provide a priming chamber, and a raised portion, a gas permeable barrier in said fuel reservoir having the top surface thereof positioned against said depressed portion, said top surface of said barrier and said raised portion coacting to define a gas chamber, a horizontally extending combined valve housing and pressure generating tube member having a portion thereof disposed within and extending across said gas chamber in direct heat exchange relation to said top wall, at least one end of said combined member extending outwardly through said side wall, nozzle means carried by one end of said combined member having a valve seat formed therein, valve means threadedly carried in said combined member and adapted to engage said valve seat for regulating the passage of vaporized fuel through said nozzle member, a combustion tube mounted on said nozzle member in direct heat exchange relation to said side wall and said combined member, gas admitting means formed in said combined member portion disposed within said gas chamber, and a wick member in said fuel reservoir extending upwardly through said barrier and having an end thereof terminating in said gas chamber adjacent to said gas admitting means, whereby when said torch is in operation, heat from said combustion tube will be transferred through said side wall and said combined member to said top wall and said gas chamber for heating said barrier and said wick end, thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and effecting the vaporization of fuel rising in said wick member.

6. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a raised portion and a depressed portion, a combined valve housing and pressure generating tube extending transversely across the top end of said side wall in direct heat exchange relation to said top wall, said tube overlying said depressed portion for a substantial portion of the length thereof and underlying said raised portion for another substantial portion of the length thereof, and a gas permeable barrier disposed in said fuel reservoir with the top surface thereof against said depressed portion and the side edges thereof sealingly engaging said cylindrical side wall, a portion of said top surface

and said raised portion coacting to define a gas chamber, whereby when said torch is in operation, heat from said tube will be transferred through said top wall to heat said barrier thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and whereby said underlying portion of said tube will heat said gas chamber thereby vaporizing fuel rising thereto.

7. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a raised portion and a depressed portion, a gas permeable barrier in said fuel reservoir with the top surface thereof positioned against said depressed portion and the side edges thereof sealingly engaging said cylindrical side wall, a portion of said top surface coacting with said raised portion to define a gas chamber, a combined valve housing and pressure generating tube extending transversely across the top end of said side wall in direct heat exchange relation to said top wall, a portion of the length of said tube being disposed within said gas chamber and another portion of the length of said tube overlying said depressed portion, whereby heat from said tube will be transferred through said top wall to heat said barrier thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and whereby said portion of said tube disposed within said gas chamber will effect the heating thereof thereby vaporizing the fuel rising thereto.

8. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a raised portion and a depressed portion, a gas permeable barrier in said fuel reservoir with the top surface thereof positioned against said depressed portion and the side edges thereof sealingly engaging said cylindrical side wall, a portion of said top surface coacting with said raised portion to define a gas chamber, a transversely extending combined valve housing and pressure generating tube disposed for a portion of the length thereof within said gas chamber and overlying said depressed portion in heat exchange relation thereto, the opposite ends of said tube extending outwardly through said side wall, a nozzle member carried by one of said ends in direct heat exchange relation to said side wall, a combustion tube mounted on said nozzle member, gas admitting means formed in said tube portion disposed within said gas chamber, and a wick member disposed in said fuel reservoir extending upwardly through said barrier and having an end thereof terminating in said gas chamber, whereby when said torch is in operation, heat from said combustion tube will be transferred through said nozzle member to said side wall and through said tube to said top wall and said gas chamber for heating said barrier and said wick end thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and effecting the vaporization of fuel rising in said wick.

9. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall sealing the top end thereof, said stepped top wall forming a raised portion and a depressed portion, a gas permeable barrier in said fuel reservoir having the top surface thereof positioned against said depressed portion and the side edges thereof sealingly engaging said side wall, a portion of said top surface coacting with said raised portion to define a gas chamber, a combined valve housing and pressure generating tube member ex-

tending transversely across the top of said side wall in direct heat exchange relation to said top wall, a portion of said combined member being disposed within said gas chamber and another portion of the length thereof overlying said depressed portion, the opposite ends of said combined member extending outwardly through said side wall, a nozzle member carried by one of said ends in direct heat exchange relation to said side wall, a valve seat formed in said nozzle member, a combustion tube mounted on said nozzle member, gas admitting means formed in said portion of said combined member disposed within said gas chamber, valve means carried by said combined member adapted to engage said valve seat for controlling the flow of fuel vapor to said combustion tube, and a wick member in said fuel reservoir extending upwardly through said barrier and having an end thereof terminating within said gas chamber, whereby when said torch is in operation, heat from said combustion tube will be transferred through said nozzle member to said side wall and through said combined member to said top wall and said gas chamber for heating said barrier and said wick end, thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and effecting the vaporization of fuel rising in said wick.

10. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a raised portion, a depressed portion and a vertically extending connecting portion, a gas permeable barrier in said fuel reservoir with the top surface thereof positioned against said depressed portion and the side edges thereof sealingly engaging said side wall, a horizontally disposed combined valve housing and pressure generating tube member underlying said raised portion and having an end thereof extending through said connecting portion, a nozzle member carried by said end in direct heat exchange relation to said connecting member, a combustion tube mounted on said nozzle member and extending horizontally therefrom, said combustion tube overlying said depressed portion in heat exchange relation thereto and extending outwardly through said side wall, whereby when said torch is in operation, heat from said combustion tube will be transferred through said nozzle member to said top wall, directly through said top wall, and through said side wall for heating of said barrier, thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall.

11. A blow torch comprising a fuel reservoir including a cylindrical side wall and a top wall forming a raised portion, a depressed portion, and a vertically extending connecting portion, a gas permeable barrier in said fuel reservoir with the top surface thereof positioned against said top wall and the side edges thereof sealingly engaging said side wall, a portion of said top surface coacting with said raised portion to define a gas chamber, a combined valve housing and pressure generating tube member extending horizontally across said gas chamber and having the opposite ends thereof extending through said side wall and said connecting portion, a combustion tube mounted on said nozzle member overlying said depressed portion in heat exchange relation thereto, said combustion tube extending outwardly through said side wall, gas admitting means formed in said combined member communicating with said gas chamber, and a wick

member in said fuel reservoir extending upwardly through said barrier and having an end thereof terminating in said gas chamber, whereby when said torch is in operation, heat from said combustion tube will be transferred directly to said side wall and said top wall and through said nozzle member to said combined member and said top wall, for heating said barrier and said gas chamber and wick end, thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and vaporizing the fuel rising to said wick end.

12. A blow torch comprising a fuel reservoir including a cylindrical side wall and a stepped top wall forming a raised portion, a depressed portion and a connecting portion, a gas permeable barrier in said fuel reservoir with the top surface thereof positioned against said depressed portion and the side edges thereof sealingly engaging said side wall, a portion of said surface, said raised portion, and said connecting portion coacting to define a gas chamber, a combined valve housing and pressure generating tube disposed in said gas chamber and extending horizontally thereacross, one end of said combined member extending outwardly through said connecting portion and the other end thereof extending outwardly through said side wall, a nozzle member carried by said one end in direct heat exchange relation to said connecting portion, a combustion tube overlying said depressed portion having one end thereof mounted on said nozzle member and the other end thereof extending outwardly through said side wall, a valve seat formed in said nozzle member, gas admitting means formed in said combined member communicating with said gas chamber, valve means carried by said combined member adapted to engage said seat for regulating the flow of vaporized fuel to said combustion tube, and a wick member in said fuel reservoir extending upwardly through said barrier and having an end thereof terminating in said gas chamber, whereby when said torch is in operation, heat from said combustion tube will be transferred through said side wall, top wall, nozzle member and combined member for heating said barrier and said gas chamber, thereby constituting said barrier a thermal as well as a physical barrier to the contact of liquid fuel with said top wall, and effecting the vaporization of fuel rising to said wick end.

13. A blow torch comprising a fuel reservoir including a side wall and a stepped top wall forming a depressed portion and a raised portion, a gas permeable barrier disposed in said fuel reservoir with the side edges of said barrier sealingly engaging said side wall and a substantial portion of the top surface of said barrier bearing against said depressed portion of said top wall, the remainder of said top surface and said raised portion of said top wall defining a gas chamber, pressure generating tube member extending transversely across said side wall adjacent the top end of the latter and disposed in direct heat exchange relation to said top wall, and means communicating said tube member with said gas chamber, whereby when said torch is in operation, heat from said tube member will be transferred through said top wall to said gas chamber and to said top surface of the barrier for constituting the latter a physical and thermal barrier to the contact of liquid fuel with said top wall.

14. A blow torch comprising a fuel reservoir

including a side wall and a stepped top wall forming a depressed portion and a raised portion, a gas permeable barrier disposed in said reservoir with the side edges of said barrier sealingly engaging said side wall and a substantial portion of the top surface of said barrier bearing against said depressed portion of said top wall, the remainder of said top surface and said raised portion of said top wall defining a gas chamber, a combined valve housing and pressure generating tube member extending transversely across said side wall adjacent the top end of the latter and disposed in direct heat exchange relation to said top wall, and means communicating said tube member with said gas chamber, whereby when said torch is in operation, heat from said tube member will be transferred through said top wall to said barrier for constituting the latter a physical and thermal barrier to the contact of liquid fuel with said top wall, and to said gas chamber

for pre-heating the gaseous fuel therein prior to its entrance into the combined tube member.

SAMUEL C. BRODY.

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