

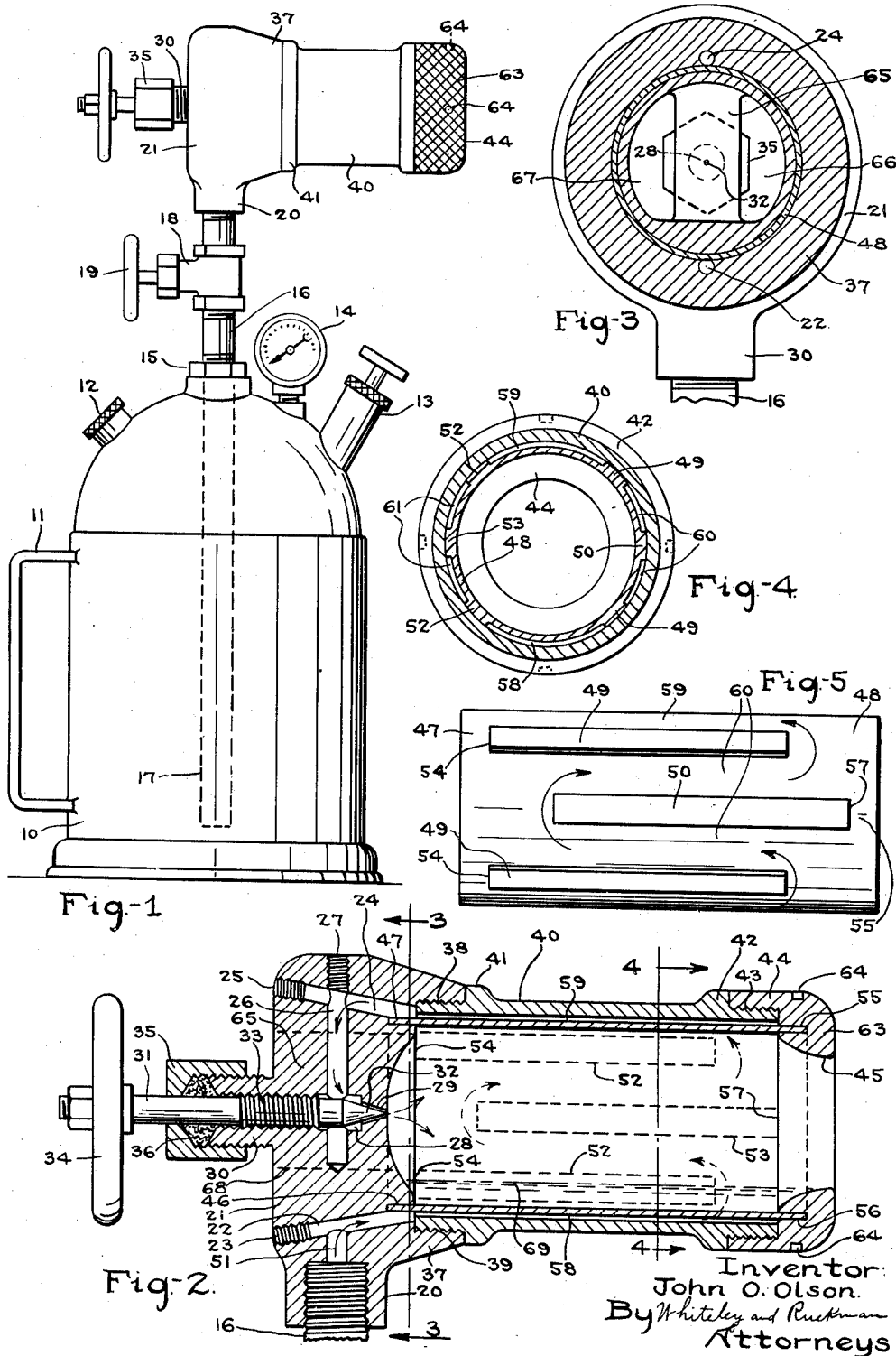
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BLOW TORCH

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BLOW TORCH

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1 Claim. (Cl. 158—33)

My invention relates to blow torches of the type employed by tinsmiths and the like for use in soldering, brazing and the like, and has for its object to provide such a blow torch which is adapted to burn kerosene or other low-test fuel oil, which will be highly efficient for operation, which will be in a high degree effective in producing complete and safe volatilization of said fuel oil, which provides means for causing a long travel of the fuel oil in contact with very hot generating surfaces, which provides means in connection with the burner head itself for holding pregenerating fluid, and which has its parts assembled so that they may readily be taken apart for purposes of cleaning.

The full objects and advantages of my invention will appear in connection with the detailed description thereof, and its novel features are particularly pointed out in the claim.

In the drawing, illustrating an application of my invention in one form,—

Fig. 1 is a side elevation view illustrating a completely assembled torch embodying the features of my invention. Fig. 2 is a sectional elevation taken through the burner head. Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 2 viewed in the direction of the arrows. Fig. 4 is a transverse sectional view taken on line 4—4 of Fig. 2 viewed in the direction of the arrows. Fig. 5 is a side elevation view of the inside generator shell.

A container can 10 of common construction having a handle 11, filling cap 12 and air pump 13, by means of which pressure is imposed upon the liquid within the container, the degree of pressure being recorded by gauge 14, has secured centrally through the top thereof, as indicated at 15, a pipe 16 which goes to near the bottom of the container, as indicated in dotted lines at 17. This pipe is provided with a valve 18 (in practice a needle valve) operated by a hand wheel 19. The pipe 16 is screwed tightly into a boss 20 formed on main head casting 21, as shown in Fig. 2. From pipe 16 a duct 51 leads into an angularly-disposed duct 22 in head casting 21, which duct 22 extends through the inner and outer walls of casting 21, as clearly shown, and is closed for access for cleaning by a screw plug 23.

At a point diametrically opposite duct 22 and in the vertical plane thereof there is formed in casting 21 a similar transverse duct 24 which also extends across casting 21, opening through both inner and outer walls thereof, and is closed at its outer end by a screw-plug 25, giving ready access to duct 24 for cleaning. Duct 24 extends across

a vertical duct 26 which opens through the upper side wall of casting 21 and is there closed by a screw plug 27, which gives ready access to duct 26 for cleaning. The duct 26 passes across a horizontal opening 28 in casting 21 terminating at its inner end in a needle valve seat 29, which opens through the inner wall of casting 21 at the center thereof, and passing outwardly through a boss 30 formed on casting 21 which has its exterior walls threaded and also has threads on its interior wall extending through boss 30 and along the interior of opening 28. The shaft 31 of needle valve 32 has a threaded portion 33 engageable with the aforesaid interior threads, and a hand wheel 34, by means of which the needle valve is adjusted for the supply of gas as hereinafter pointed out. A packing nut 35 is adapted to be screwed on the outer threads of boss 30 to seat a packing 36 therein whereby the needle valve is caused to operate in gas-tight manner within the opening 28.

The casting 21 is provided with an extension 37 which has an internally threaded annular seat 38 which receives the external threads 39 of a cylindrical casting 40, adapted to have an annular rib 41 thereof seated by means of said thread upon the annular face of extension 37 so as to make gas-tight connection therewith. The casting cylinder 40 has at its outer end a similar annular rib 42 and annular threaded portion 43 upon which is adapted to be screwed a burner head cap 44 having a central flame opening 45, as clearly shown in Fig. 2. There is formed in the inner wall of casting 21 a deep annular groove 46 in which is adapted to be seated an end portion 47 of a cylindrical gas-generating member 48. The member 48 is provided with two sets of ribs 49, 50 and 52, 53, respectively, on opposite sides of the vertical diameter thereof, as best shown in Figs. 4 and 5. The ribs 49 and 52 have their inner ends 54 positioned so as to seat against the annular edge of part 37 of casting 21 within the threaded portion 38 thereof, as indicated in dotted lines in Fig. 2. The opposite end of cylinder 48, as indicated at 55, extends into a deep annular groove 56 in burner head 44. The ribs 50 (and 53), as shown in Fig. 5, are of the same length as ribs 49 (and 52), but are differently positioned, so that the outer ends 57 of said ribs 50 and 53 will take against the inner annular wall of burner head 44 within the threaded portion therein, as shown in dotted lines in Fig. 2.

There is thus formed between the inner wall of casting 40 and the outer wall of cylinder 48 a main inlet passage 58 at the bottom and a main

outlet passage 59 opposite and at the top of the cylinder, which passages are connected by tortuous passages 60 on one side and 61 on the other side, as indicated in Fig. 4. It is to be noted that the ribs 49, 50 and 52, 53 are extended outwardly from the cylinder 48 a distance to fit snugly against the inner wall of the cylinder casting 40. And when the generator cylinder 48 and these ribs carried thereon are heated, the resulting expansion will make a substantially gas-tight fit, while at the same time the cylinder 48 will be freely removable upon unscrewing the burner head 44, for cleaning. The burner head 44 is knurled as indicated at 63, and also is provided with a series of socket holes 64 for receiving the prongs of a socket wrench to render it easily removable.

As clearly shown in Fig. 3, the casting 21 is not entirely closed at its front end, but embodies a transverse bridge member 65 upon which the boss 30 is carried, and through which the passageway 28 extends to the needle valve opening 29 at the center of said bridge. The bridge 65 leaves a pair of openings 66 and 67 which extend through the head casting 21 on either side of the bridge 65 for the admission of air within the burner member for consumption by combustion. It will be observed that when the blow torch is sitting upon a horizontal surface, as the floor or a table top, there is a horizontal chamber in the bottom portion of generating cylinder 48 extending below the line of the openings 66 and 67, as indicated by a dotted line at 68 in Fig. 2. Within this chamber priming fluid, such as alcohol or gasoline, may be poured, as indicated by dotted lines at 69 in Fig. 2. The priming fluid may be readily introduced through the flame opening 45. The ignition and burning of this priming fluid will be ample to begin generation of gas, so that no application of flame outside of the burner chamber is ever required.

The aperture 22 leads into the bottom central passageway 58, and the aperture 24 leads from the opposite top central passageway 59. For operating the device, a suitable pressure will be put on the liquid fuel within container 10 by means of pump 13, as indicated by gauge 14. Valve 19 will be operated to admit a desired flow of this fuel to duct 22 and needle valve 32 may be operated to permit slight exit of gas or oil. This will result in placing a thin film of fuel oil in all of the passages 58, 59, 60 and 61. This fuel will be turned to gas, first by reason of combustion of the priming liquid, and thereafter by the heat of the torch flame itself. The generator is so efficient that it will operate when the needle of valve 32 has been turned to give an exceedingly small torch flame, and when the flame is very small gas will continue to be furnished and the flame remain unextinguished. This is an important advantage, since, in torches as constructed, it is necessary to maintain a full blow flame in order to continue generation, which results in waste of fuel when the torch is not in use. As heretofore pointed out, the entire construction is such that all passageways may be readily got at for cleaning.

I claim:

A blow torch comprising a pair of cylindrical shells positioned one within the other with a narrow annular space between them, the inner shell acting as a gas generator, a head member to which the inner ends of said shells are attached, a burner cap attached to the outer ends of said shells, a plurality of longitudinal ribs in staggered relation to each other fitting said annular space with the ends of the ribs in alternation abutting said head member and burner cap respectively to form tortuous passages in said annular space, a fuel inlet to said passages on one side of said shells, and a gas outlet from said passages on the other side of said shells.

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