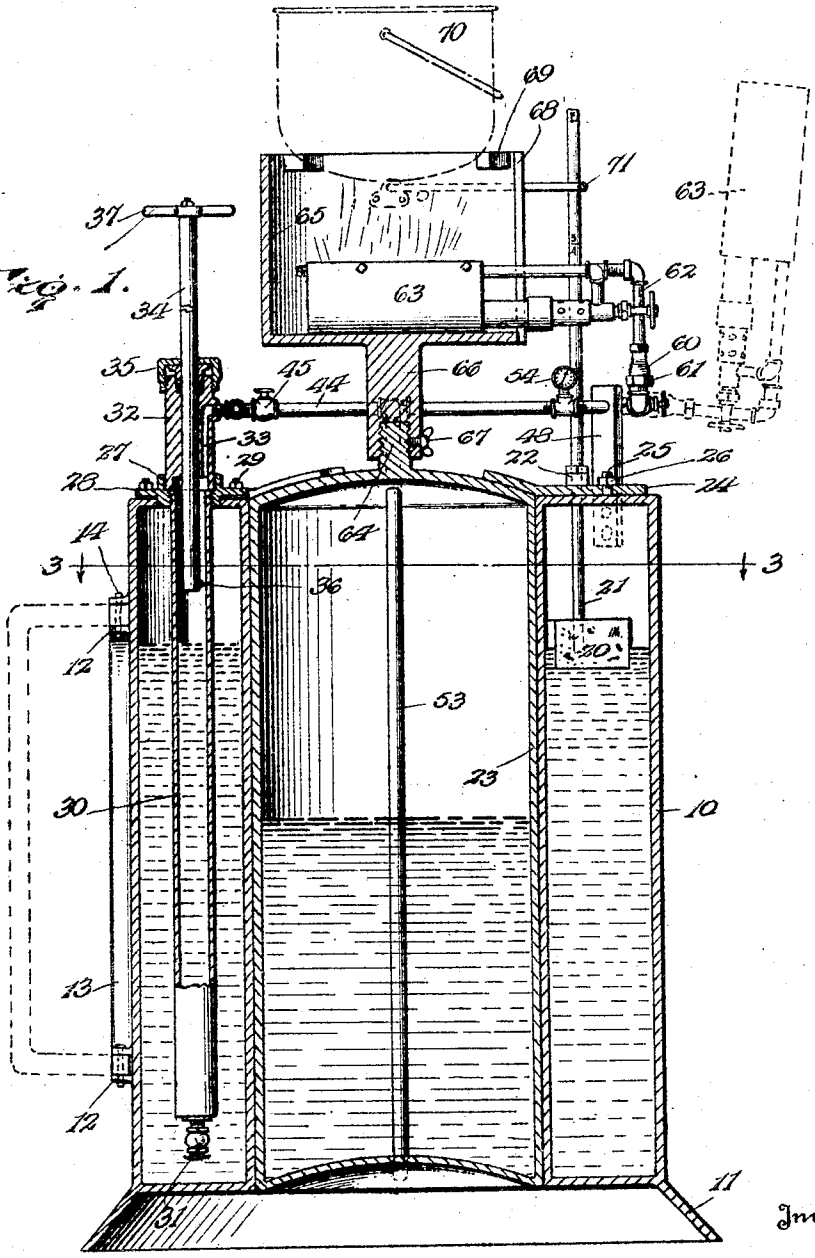
Nov. 3, 1925. 1,560,016

C. E. CHAPMAN

COMBINED FIRE POT AND BRAZING TORCH

Filed May 15, 1923 2 Sheets-Sheet 1

Fig. 1.



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Nov. 3, 1925. **1,560,016**

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Fig. 2.

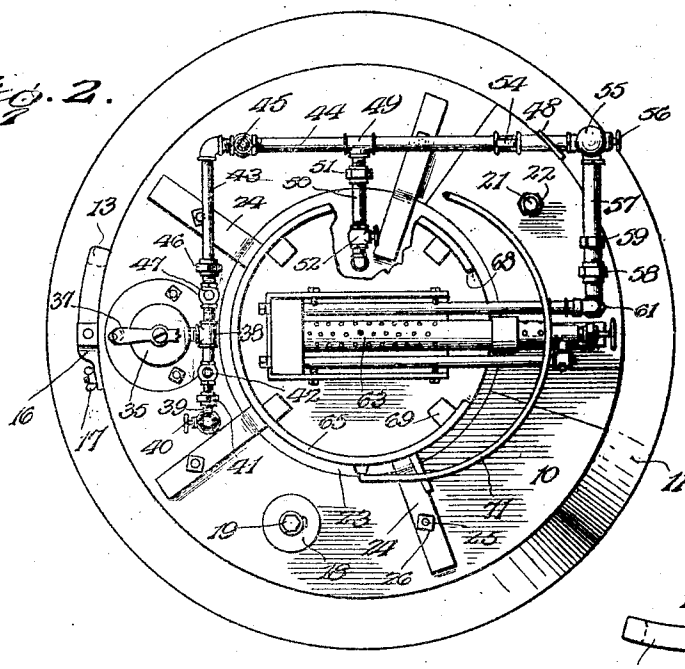


Fig. 3.

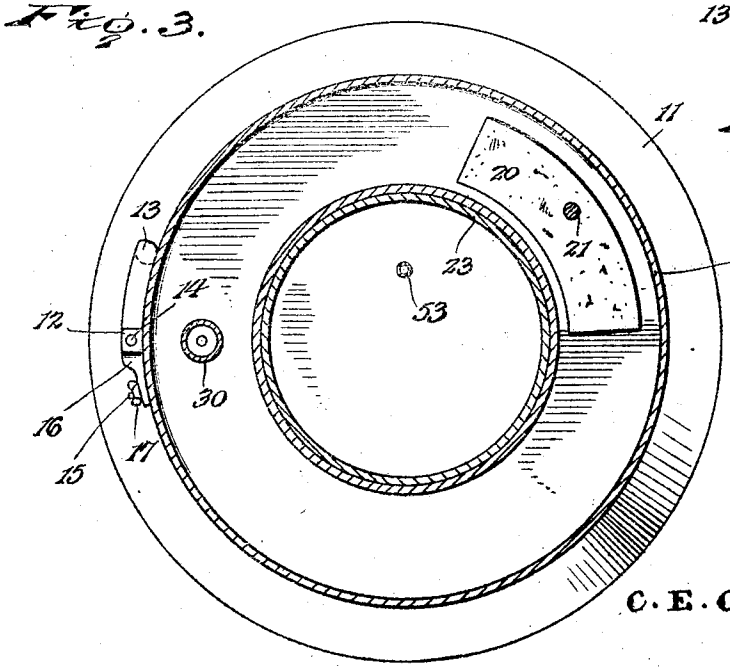
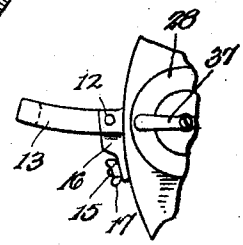


Fig. 4.



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Patented Nov. 3, 1925. 1,560,016

UNITED STATES PATENT OFFICE.

CHARLES E. CHAPMAN, OF FORT EDWARD, NEW YORK, ASSIGNOR OF ONE-HALF TO JOSEPH GOODFELLOW, OF FORT EDWARD, NEW YORK.

COMBINED FIRE POT AND BRAZING TORCH.

Application filed May 15, 1923. Serial No. 639,173.

To all whom it may concern:

Be it known that I, CHARLES E. CHAPMAN, citizen of the United States, residing at Fort Edward, in the county of Washington and State of New York, have invented certain new and useful Improvements in Combined Fire Pots and Brazing Torches, of which the following is a specification.

This invention relates to a combined fire pot and brazing torch for plumbers and tinners and seeks, among other objects, to provide a device which may be easily converted from a fire pot into a torch or vice versa and wherein an extremely high pressure on the fuel may be had for producing an intensely hot flame to thus provide a device capable for use in brazing with brass.

The invention seeks, as a further object, to provide a fire pot which will be unaffected by the wind, as in cable work, this being accomplished by the use of high pressure on the fuel.

The invention has as another object to provide a device which may be easily kept in continuous operation so that the user of the device will not be required to stop in the midst of a wiping operation, for instance, to fill the fire pot with fuel, with consequent loss of the joint and resulting expense.

Still another object of the invention is to provide a device wherein the usual leather piston air pump will be supplanted by a plunger pressure generator and the disagreeable features of renewing such a leather piston pump eliminated.

Another object of the invention is to provide a device adapted to generate a flame of such great intensity that the usual time consumed in heating a pot of wiping metal will be considerably reduced.

And the invention seeks, as a still further object, to provide a device wherein a high pressure may be created on the fuel with but small effort.

Other and incidental objects will appear hereinafter.

In the drawings:

Figure 1 is a vertical sectional view through my improved torch and fire pot,

Figure 2 is a top plan view of the device,

Figure 3 is a transverse sectional view on the line 3—3 of Figure 1, looking in the direction of the arrows, and

Figure 4 is a detail plan view showing the handle of the device in active position.

In carrying the invention into effect, I employ an annular fuel supply chamber 10 having concentric inner and outer walls and flat top and bottom walls, the chamber being provided at its lower end with a base ring or flange 11 suitably secured to the chamber. Formed on the chamber at one side thereof are vertically spaced pairs of lugs 12 and pivoted at its ends between said pairs of lugs is a handle 13 connected with the lugs by suitable pivot members 14. Extending from the chamber adjacent the uppermost pair of lugs is a stud 15 and freely mounted on said stud is a stop block 16 secured upon the stud by a wing nut 17. As brought out in Figure 3 of the drawings, the handle may be swung to lie against the chamber, when the stop block may be positioned against the upper end of the handle for locking the handle in inactive position. On the other hand, the handle may, as brought out in Figure 4, be swung to extend from the chamber, when the stop block may be positioned against the adjacent side edge of the handle at its upper end for locking the handle in active position. At its upper end, the chamber 10 is provided with a suitable filler opening normally closed by a cap 18 and mounted on said cap is an appropriate air valve 19. Disposed within the chamber is a float 20 and extending upwardly from the float is a float rod 21 received through a gland 22 upon the top wall of the chamber. As brought out in Figure 1, the float rod is graduated and will thus provide a means for indicating the level of fuel in the chamber.

Snugly but removably fitting in the central opening of the fuel chamber 10 is an auxiliary pressure chamber 23, the chambers being of equal length, and extending from the pressure chamber at its upper end are arms 24 resting upon the upper end of the fuel chamber. Rising from the top wall of the fuel chamber are studs 25 extending freely through said arms and threaded upon the studs are nuts 26 removably securing the pressure chamber in position. Snugly fitting through the top wall of the fuel chamber at one side thereof is a coupling sleeve 27 having an annular flange 28 resting flat against the top wall and extending through said flange are studs 29 carrying nuts clamping the sleeve in place, a gasket being interposed beneath said flange to form a sealed

joint between the sleeve and said chamber. Depending from the sleeve 27 into the fuel chamber is a cylindrical displacement chamber 30 removably threaded at its upper end into the lower end of the sleeve and mounted upon the displacement chamber at its lower end is an upwardly opening check valve 31 extending to a point near the bottom of the fuel chamber. Removably threaded into the upper end of the sleeve 27 is an extension 32 in which is formed a passage 33 communicating with the displacement chamber and slidable through said extension axially of the displacement chamber is a plunger 34, the extension being equipped with a gland 35 for said plunger. Mounted upon the plunger at its lower end is a stop pin 36 for limiting the plunger against upward displacement and secured upon the plunger at its upper end is a handle 37.

Connected with the passage 33 of the extension 32 is a T coupling 38 to one end of which is attached a return pipe 39 discharging into the fuel chamber at its upper end, and interposed in said pipe is a shut-off valve 40. The pipe also preferably carries a union 41 in advance of which is a check valve 42 opening toward the valve 40. Connected to the upper end of the coupling 38 is a pipe 43 connected by an elbow with a pipe 44 in which is interposed a shut-off valve 45, and interposed in the pipe 43 is a union 46 in advance of which is arranged a check valve 47 opening toward the valve 45. The pipe 44 extends horizontally at the upper end of the chamber 10 and rising from said chamber is a supporting post 48 for the forward end portion of the pipe. Interposed in the pipe is a T coupling 49 to which is connected a pipe 50 carrying a union 51 and interposed in the pipe 50 is a shut-off valve 52. The pipe 50 is connected with a pipe 53 extending downwardly through the top wall of the pressure chamber 23 to a point near the bottom of said chamber the pipe being welded to said top wall. Connected with the pipe 44 near the forward end thereof is an appropriate pressure gauge 54 and threaded upon said pipe at its forward end is a fuel regulating valve casing 55 mounting a needle valve 56. Connected to the valve casing 55 to extend at right angles to the pipe 44 is a horizontally disposed pipe 57 carrying a union 58 and interposed in said pipe is a swivel joint 59. Rising from the pipe 57 at its forward end is a pipe 60 in which is interposed a swivel joint 61 and connected to the pipe 60 is the feed pipe 62 of a burner 63, this burner forming the subject matter of Patent No. 1,489,659, granted to me April 8, 1924. Upstanding from the top wall of the pressure chamber 23 is an axially disposed stud 64 upon which is mounted a burner shield and kettle holder 65 having a stem 66 threaded upon the stud and equipped with a set screw 67 removably securing the shield and kettle holder in position. At one side, the burner shield and kettle holder 65 is cut away, as indicated at 68, to receive the burner 63 resting upon the bottom wall of said shield and kettle holder, and projecting radially inward from the wall of the holder are lugs 69 for supporting a kettle, as conventionally illustrated at 70, above the burner. Preferably, the burner shield and kettle holder is equipped with a handle 71 by which the entire device may be carried.

In use, the fuel supply chamber 10 is filled with gasoline, the level of which will be registered by the float rod 21. Accordingly, the user of the device may readily determine when the fuel supply is becoming low and thus avoid the occurrence of running out of fuel during a wiping operation, for instance, or other piece of work. The shut-off valve 40 is then closed while the valve 45 is opened, as is also the valve 52, for establishing communication between the displacement chamber 30 and the auxiliary pressure chamber 23, the control valve 56 being closed. Upon the filling of the fuel chamber 10, it will be seen that the fuel will rise in the displacement chamber 30 to substantially the level of the fuel in the fuel chamber so that the plunger 34 may then be operated for displacing the fuel in the chamber 30 upwardly through the passage 33 of the extension 32 and through the pipes 43, 44, 50 and 53 into the pressure chamber 23. If, upon the actuation of the plunger 34, air is found to be present in the displacement chamber 30 causing the pressure generator, constituted in the displacement chamber and the plunger 34, to be air bound, the shut-off valve 45 is closed and the valve 40 opened. Accordingly, by then operating the plunger, the air in the chamber 30 may be displaced therefrom through the pipe 39 into the pressure chamber. When this is accomplished and the pressure generator is found to work properly, the valve 40 is then closed and the valve 45 opened, when the pressure generator may be operated for displacing the fuel from the displacement chamber into the pressure chamber. In this connection, it is to be noted that by employing the plunger 34, I eliminate the usual troubles inherent in a leather piston pump. Furthermore, since the plunger is of relatively small diameter, the plunger may be operated without undue physical effort for displacing sufficient fuel into the pressure chamber to create an extremely high pressure in said chamber, the air in the pressure chamber being, of course, compressed as the fuel is introduced into said chamber.

After the desired pressure has been obtained in the auxiliary pressure chamber 23, the valve 45 may be closed for relieving the

check valve 47 when, by opening the control valve 56, the burner may be lighted, the burner being then fed with fuel from the pressure chamber under the pressure in said chamber. If, during the operation of the burner, the pressure in the pressure chamber becomes exhausted below the point desired, the valve 45 is opened, when the plunger 34 may be actuated for displacing additional fuel into the pressure chamber and again raising the pressure in said chamber. During this operation, fuel will, of course, be forced directly to the burner for maintaining the flame at the burner while the greater portion of the fuel will be displaced downwardly through the pipes 50 and 53 into the pressure chamber. Accordingly, the replenishing of the fuel in the pressure chamber with coincident raising of pressure in said chamber, will cause no interruption of the burner.

When the device is to be used as a fire pot, the burner 63 is, as shown in full lines in Figures 1 and 2, disposed to extend into the burner shield and kettle holder 65 so that a kettle resting upon the holder may be heated by the flames from the burner. However, by employing the swivel joints 59 and 61, it will be seen that the burner may, as shown in dotted lines in Figure 1, be swung upwardly out of and away from the fire pot upon the swivel joint 59 when the burner may, if desired, be swung to horizontal position or other desired angular position upon the swivel joint 61, so that the device may then be used as a torch. In this connection, attention is particularly directed to the fact that by employing the plunger 34 in contradistinction to a pump piston and displacing the fuel from the fuel chamber into the pressure chamber, as distinguished from pumping fuel into said chamber, I provide a pressure generator capable of creating an extremely high pressure in the pressure chamber, a pressure much higher than would be possible to obtain with a piston pump. Accordingly, a flame of correspondingly high velocity and intense heat is obtained at the burner with the result that the flame will not blow out while, due to the intense heat generated, the device may be used for brazing brass or other brazing purposes requiring an intensely hot flame.

Having thus described the invention, what is claimed as new is:

1. In a fire pot and torch, a fuel chamber, a displacement chamber extending into the fuel chamber and provided at the upper end of said displacement chamber with an extension disposed exteriorly of the fuel chamber, a discharge pipe leading from said extension, means for displacing fuel in the displaced chamber upwardly through said extension and discharge pipe, and a pipe outside of the fuel chamber connected with said discharge pipe and the fuel chamber for relieving the displacement chamber of air.

2. In a fire pot and torch, a fuel chamber, a pressure chamber, a displacement chamber extending into the fuel chamber and provided at the upper end of said displacement chamber with an extension disposed exteriorly of the fuel chamber, a discharge pipe connected with said extension and communicating with the pressure chamber, a plunger reciprocable in the displacement chamber for displacing fuel upwardly through the said extension and through the discharge pipe into the pressure chamber, a pipe outside of the fuel chamber connected with said discharge pipe and the fuel chamber for relieving the displacement chamber of air, a check valve in each of said pipes, and a shut-off valve in each of said pipes.

3. In a fire pot and torch, a fuel chamber, a pressure chamber, a displacement chamber extending into the fuel chamber and provided at the upper end of said displacement chamber with an extension exteriorly of the fuel chamber, a burner, a discharge pipe connected with said extension and leading direct to the burner, a branch pipe connected with the discharge pipe and emptying into the pressure chamber, and a piston reciprocable in the displacement chamber for displacing fuel upwardly through said extension and through the discharge pipe to the burner and through the said branch pipe into the pressure chamber simultaneously.

4. In a fire pot and torch, a fuel chamber, a pressure chamber, a displacement chamber extending into the fuel chamber and provided at the upper end of said displacement chamber with an extension exteriorly of the fuel chamber, a burner, a discharge pipe connected with said extension and leading direct to the burner, a branch pipe connected with the discharge pipe and emptying into the pressure chamber, a piston reciprocable in the displacement chamber for displacing fuel upwardly through said extension and through the discharge pipe to the burner and through said branch pipe into the pressure chamber simultaneously, a valve in the discharge pipe between the branch pipe and burner for shutting off flow of fuel to the burner, and a valve in the branch pipe for shutting off flow of fuel through said branch pipe.

5. In a fire pot and torch, the combination of an annular fuel chamber, an auxiliary pressure chamber received in the center opening of the fuel chamber, radial arms permanently fixed to the upper end of the pressure chamber and resting upon the upper end of the fuel chamber supporting the weight of the pressure chamber, studs rising from the fuel chamber to extend freely

through said arms, and nuts screwed on said studs detachably securing the pressure chamber in position.

6. In a fire pot and torch, a fuel chamber having a top wall, a sleeve snugly fitting through said wall, fastening devices detachably connecting the sleeve with said wall, a displacement chamber removably engaged at its upper end with the lower end of said sleeve, an extension removably engaged at its lower end with the upper end of said sleeve, a discharge pipe leading from said extension, and a piston reciprocable in said displacement chamber for displacing fuel upwardly through said extension and through said discharge pipe.

In testimony whereof I affix my signature.

CHARLES E. CHAPMAN. [L. S.]