

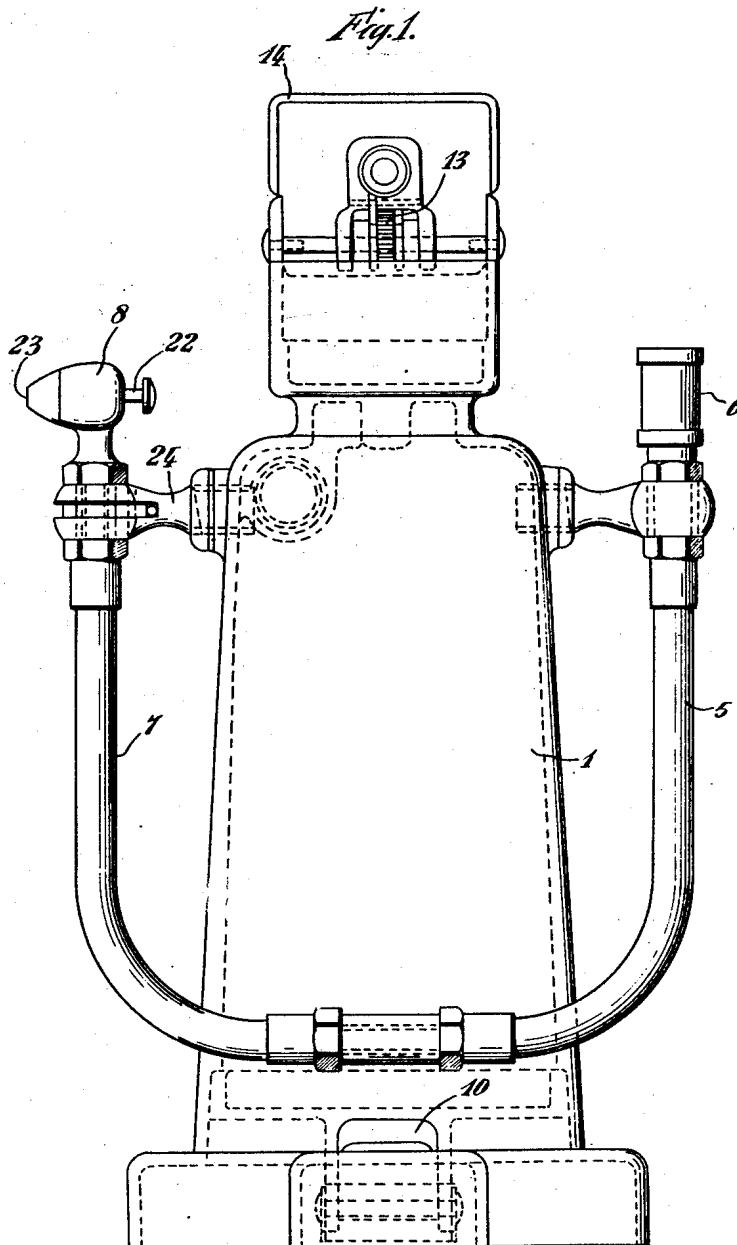
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B. SANDOR
PYROPHORIC LIGHTER

2,534,068

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3 Sheets-Sheet 1



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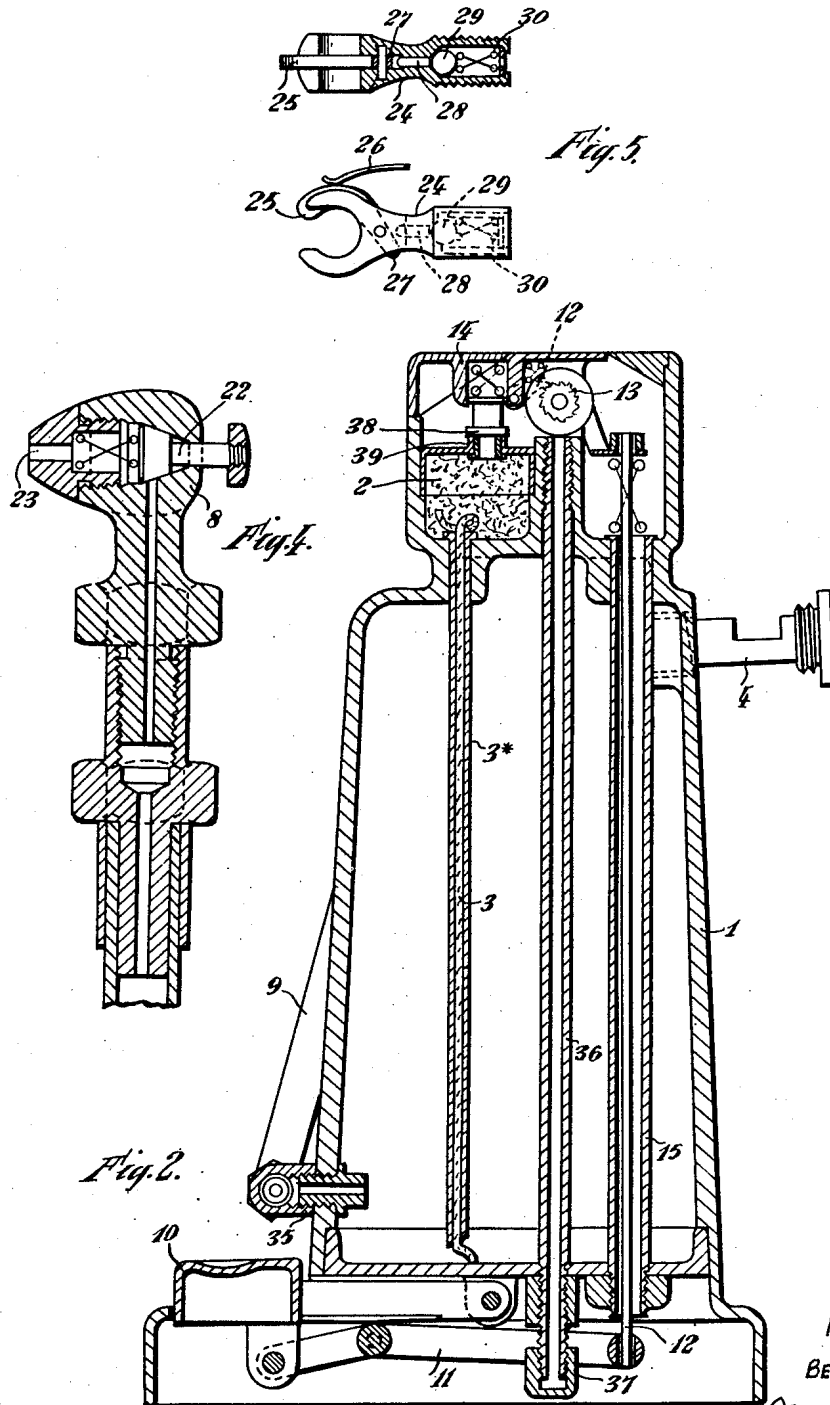
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3 Sheets-Sheet 2



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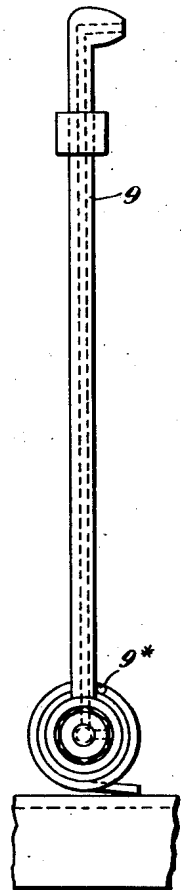
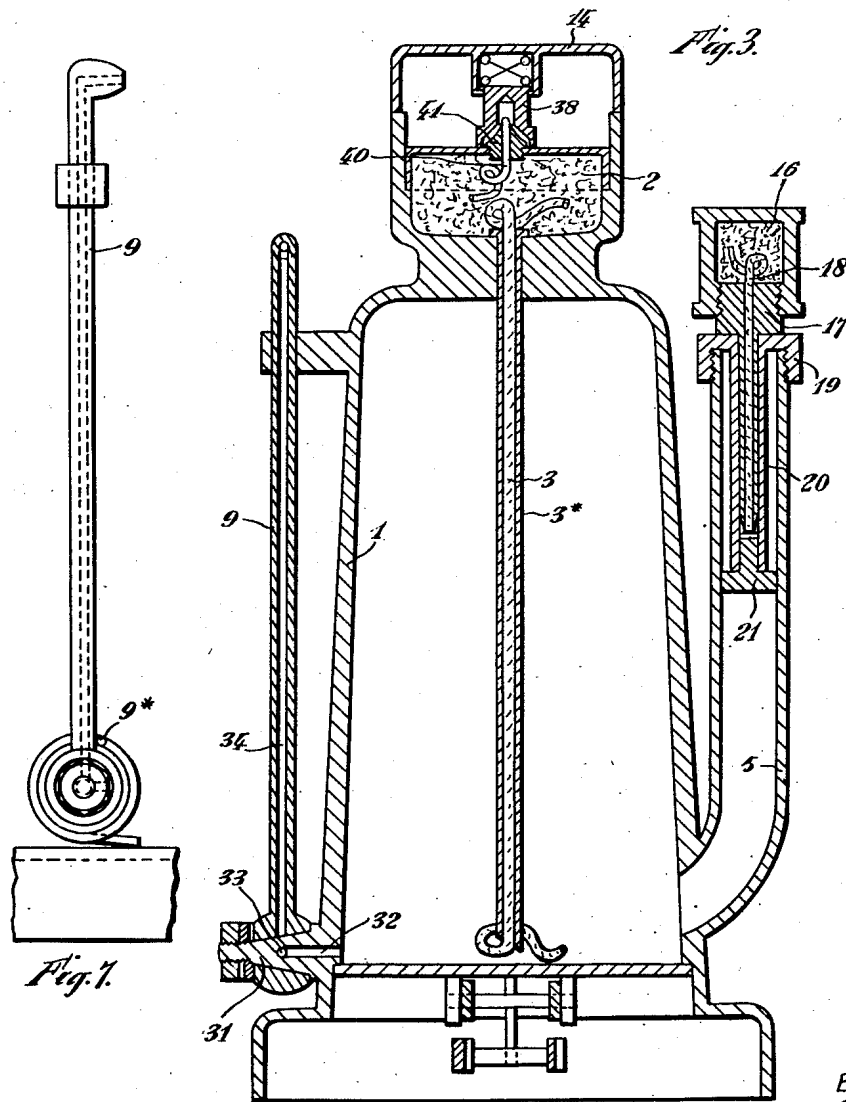
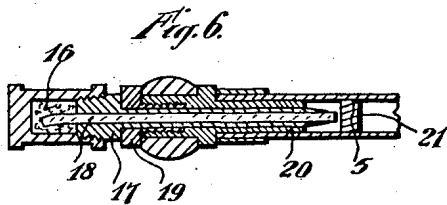
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PYROPHORIC LIGHTER

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5 Claims. (Cl. 67-4.1)

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The present invention relates to pyrophoric lighters and has for one object the provision of a lighter for table or like use having a large capacity tank.

Another object is to provide such a lighter with means whereby smaller lighters may be filled from the fuel tank thereof.

A further object is to provide mechanism for automatically opening the cap, effecting the sparking and re-closing the cap after use.

According to the invention there is provided a pyrophoric lighter having a large capacity liquid fuel tank, means for feeding the fuel from the tank to the wick of the lighter and an outlet from said tank for filling smaller lighters therefrom.

The outlet on the tank may conveniently be fitted with a pipe line containing a nozzle or the like at its exterior end whereby the fuel may be fed therefrom into pocket lighters or other extraneous articles.

Various means may be provided to ensure a good flow of fuel through the pipe line.

In one construction, the outlet is provided near the bottom of the tank and a flexible pipe is connected thereto so that fuel can be delivered from the tank by gravity. To this end the lighter may be mounted on a suitable stand to raise the fuel tank to a sufficient height so that the article to be filled may be held below the level of the outlet end on the table or other supporting surface. In addition, the exterior end of the pipe line may be supported in a position of rest above the level of the top of the fuel in the tank, in a clip or the like mounted on the exterior of the lighter so that fuel does not drip therefrom when it is not in use.

In an alternative construction, the pipe line is connected to the fuel tank by a siphon arrangement so that the outlet may be at or near the top of the tank and the stand hereinbefore referred to need not then be provided.

In yet another construction, the fuel may be discharged through a capillary tube having pressure feeding means if desired.

In further modifications the feed may be obtained by creating a vacuum in the tank and leading the fuel out by any suitable release, or again, a pressure higher than atmospheric pressure may be set up in the fuel tank and the outlet or the pipe end may be provided with a valve mechanism such as a ball valve to control the flow. In such a construction, a valve would also be provided at the wick end or outlet to prevent overflow of fuel at this point.

In order to avoid overflow at the wick when the lighter is filled, the wick may be arranged

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within a tube depending nearly to the bottom of the fuel tank. The filler would be arranged in the bottom of the tank away from the position of the tube end so that when the lighter is filled in the upside down position, the fuel cannot enter into the wick tube until the inlet is closed and the lighter is upright. This arrangement then becomes similar to the well known unspillable ink-pot.

To avoid over saturation and overflow at the wick and liquid passing out at the lighter end whilst filling or when in use, the wick may be surrounded by a chamber filled with cotton wool or other absorbent material and connection between the cotton wool chamber and fuel tank may be obtained by a valve, by capillary passages, a wick or wicks or a leather or like washer.

The fuel tank may be sealed by a double seal at the lighter end. The cotton wool chamber may be separate and screwed onto the fuel tank pressing up against a shoulder provided thereon, having a sealing washer. Or again, there could be a spring-operated valve in which the tensioning of the spring is obtained by the screwing down of a closure cap or ring or by a bayonet cap. This construction has the advantage that the wick tube may be bent or that other fittings may be provided on the cotton wool chamber and their relative position is still controlled when an airtight seal is provided.

If the tank is filled from the top when the cotton wool chamber is in position, a spring operated valve such as a ball valve is opened allowing liquid fuel to enter the fuel container or the tube forming a connection with the cotton wool chamber. This could be combined with a filling funnel.

If the tank is to be filled from the bottom, a tube is preferably connected to the filling opening and extends upwardly nearly to the top of the fuel tank. Then, when the fuel is poured in, in the upside down position, it must flow right up the tube before running into the fuel tank. When the opening is closed and the lighter is upright, no fuel will then be able to return into the tube so that no fuel can seep out of the closure, which may be a screw plug.

The whole apparatus may be produced by die casting, the bottom being secured by swaging or soldering.

It will be understood that the lighter may be made from various materials but we prefer aluminum alloy or a similar material for ease in working and low production costs.

The mechanism for automatically opening the

cap, effecting the sparking and reclosing the cap advantageously comprises an actuating plunger, knob, key or the like linked by a bell-crank lever and a spindle to the cap of the spark producing mechanism. Said spindle may extend through the body of the lighter, preferably through a tube located between the base of the lighter and the top part which houses the striker mechanism, wick and so on, or may be located on the outside of the body. Said spindle is pivoted on the cap in such a manner that at the depression of the plunger or the like, the cap is automatically opened and conversely when the plunger or the like is released the cap is closed again.

At the same time the movement of the cap serves to actuate the flint wheel contacting with a flint to produce a spark which is thrown either onto a wick protruding from a wick holder and depending into a chamber filled with absorbent material in the usual manner or if desired onto an absorbent sleeve-like container and to which inflammable spirit or vapour is conveyed through a capillary or other tube depending near to the bottom of that part of the lighter body which is adapted to contain such fuel and which fuel can also be used for filling the extraneous articles. The flint is also preferably carried in a tube which has its other end in the base of the lighter with the usual adjusting means and whereby the same is readily accessible for adjustment.

The mechanism for operating the striking wheel may consist of pawl and ratchet mechanism on the spindle of the striking wheel and actuated automatically at the opening of the cap or a spring may be mounted on the spindle of the striking wheel for rotating same upon the opening of the cap but any other known arrangement is readily applicable.

As regards the dispensing of lighting fuel for use in extraneous articles this may, according to a further construction, be effected either through a flexible delivery tube provided with a valve, cock or the like or through a rigid tube which can be turned through a predetermined angle in order to release the fuel therethrough directly into some other article, for example a pocket lighter, the end of the tube preferably having a separate valve nozzle adapted to permit of the discharge of a predetermined quantity of fuel for which purpose the nozzle must be opened only after a valve provided between the tank and the rigid tube is closed. This arrangement can be combined with known coin-freed delivery mechanism.

To ensure a good flow for the fuel being dispensed, an air hole preferably provided with a spring operated valve, is fitted to the tank in such a manner that it opens when the delivery tube is removed from its normal position and is closed again when the tube is replaced, in order to avoid evaporation.

In some cases the main tank can have a further outlet for a pipe lighter preferably in the form of a tubular member filled tightly with absorbent material or with a felt or other suitable washer at its base to absorb a certain amount of fuel. The pipe lighter is in the form of a rod or the like and is provided with a wick advantageously connected with a chamber containing cotton wool or the like inside the handle portion of the pipe lighter. When the pipe lighter is placed in the tube it closes the outlet in an airtight manner leaving the wick touching the felt washer or absorbent material at the base of the tube thereby becoming saturated. In this man-

ner the pipe lighter is always ready for use as a spill to be ignited by the flame of the table lighter itself.

To fill the main tank of the lighter there may be provided a slotted tube, the slot being preferably in the top surface, and said tube being inclined if desired and arranged that when pulled out, fuel from a bottle or other container can be readily poured thereinto. The tube may also have spring means for returning it to its normal position to close the mouth but it can equally well have a screw-threaded plug or a bayonet closure or other means of closing the mouth.

Any exterior construction for the lighter as a whole may be employed, for example it may be made to simulate a petrol pump which simulation is enhanced by the exterior pipe line for conveying fuel into some extraneous article or it may be made to resemble a lighthouse or other object.

It will be understood that the invention has only been described by way of example and that various modification may be made to the specific details given above without thereby exceeding the scope of the general principle.

For the better understanding of the invention the same has been shown by way of simple example, in the accompanying drawings in which:

Figure 1 shows a front elevation of one embodiment; Fig. 2 shows a side elevation of another embodiment; Fig. 3 shows a vertical section of a third embodiment; Fig. 4 shows a detail in section of one form of a delivery tap; Fig. 5 shows a detail in section and plan of an air valve device; Fig. 6 shows a vertical section of a pipe lighter spill attachment and Fig. 7 shows an elevation of an alternative form of delivery tap.

In these figures, a lighter body 1 has a large capacity fuel tank surmounted by a lighter mechanism provided with a chamber 2 which is filled with cotton wool and acts as a supply chamber for the lighter mechanism. The chamber 2 is kept supplied from the large fuel tank by means of a wick 3 and capillary tube 3* which depend to the bottom of the large fuel tank in order that the last drop of fuel may be used up by the lighter mechanism.

The fuel tank is provided with a filling aperture comprising either a slotted filling cap or tube 4 (Fig. 2) which can be pushed back so as to be substantially flush with and screwed into the body of the tank after use, or a housing 5 (Figs. 1, 3 and 6) which also forms a mount for a removable pipe lighter spill 6.

Fuel can be dispensed to extraneous articles as required by means of a flexible pipe line 7 having a delivery valve 8 or by means of a pivoted rigid tube 9 which is adapted to actuate a valve at its base, when moved or rotated forwardly through a suitable angle.

The lighter mechanism is adapted to be operated by finger pressure on a plunger or key 10 which actuates a centrally-pivoted bell crank 11 coupled to a push rod spindle 12. Depression of the plunger or key 10 causes a corresponding rise of the push rod spindle 12, and with the release of the key, the parts return to their initial positions. The upper end of the push rod spindle 12 is made fast to an arm 12* which is pivotally attached to an eccentrically arranged pin on a lighter cap 14 in such a manner as to cause the latter to turn on its axis and open when the push rod spindle 12 is moved upwardly. The lighter cap 14 is coupled to a striker wheel 13 by means of a pawl on the lighter cap 14 coacting

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with a ratchet wheel fast to the striker wheel, whereby when the lighter cap opens, the striker wheel is driven round and when the lighter cap closes the striker wheel remains stationary. A liquid tight tube 15 is provided through the tank to house spindle 12.

The pipe lighter spill 6 comprises a handle portion having an internal chamber 16 filled with cotton wool, the cap screwing onto a stem 17 provided with a bore through which can pass a wick 18. The narrowed portion of stem 17 seats in a screw cap 19 attached to the end of housing 5 and having a sleeve portion 20 passing thereinto. A felt or like pad 21 is provided in housing 5 and serves to saturate the end of the wick 18 with fuel when the pipe lighter spill is placed in its seating. When required for use, the spill is removed and ignited by means of the lighter mechanism, the fuel in its internal chamber 16 being sufficient to last long enough for pipe lighting or like uses.

Flexible pipe line 7 is attached at the lower end of the large capacity fuel tank and has at its delivery end a delivery valve 8, shown in detail in Fig. 4. The valve takes the form of a spring-pressed plunger 22 which in the position of rest blocks the end of the bore of the pipe line. When said plunger is pressed by hand, the bore is opened and fuel can flow through nozzle 23 into a separate lighter or other receptacle as required.

A spring-pressed air valve 24 is provided and is adapted to form a clip or stand for the head of the flexible pipe line when not in use. When the head of the flexible pipe line is removed from the clip for the purpose of filling another article, one claw 25 of the clip is moved inwardly by spring 26 which is attached to the clip or lighter body in any convenient way. A lever arm 27 on claw 25 bears on a block 28 which in turn displaces a ball valve 29 from its seating against the pressure of a return spring 30 thus allowing air to pass into the upper part of the large capacity fuel tank and thereby permitting a free flow of fuel through the flexible pipe line. When the dispenser is not in use, the air hole will be closed so as to avoid any loss of fuel by evaporation.

A pivoted rigid delivery pipe 9 is provided and can pivot either substantially parallel with the main body 1 as in Fig. 3 or in a direction away from the body as in Fig. 2.

In the embodiment at Fig. 3 the tube 9 can pivot against the pressure of a torsion return spring 9*, Fig. 7, about a conically-formed bearing 31 and is held there by suitable nuts. In the bearing 31 are formed two bores 32 and 33 interconnecting and at right angles, bore 33 being shown in end-on position. When rigid tube 9 is pivoted until it is substantially horizontal, its bore 34 will then correspond with bore 33 allowing fuel to flow through from the main tank to the delivery end of rigid tube 9 and so into a separate article, as required.

When tube 9 is returned to a substantially upright position, bore 33 and bore 34 no longer coincide and the fuel is sealed in the main tank.

In the embodiment at Fig. 2, rigid tube 9 is attached to a rotatable valve sleeve mounted on a tap plug 35, the fuel being able to flow through the bore of the tap plug, through another bore in the rotatable valve sleeve and thence into the bore of the rigid tube, for delivery purposes.

In the lighter mechanism, the striker wheel 13 is operated by pressure on the plunger or key 10 and bears on a flint (not shown) housed in a flint tube 36 passing through the main fuel tank and

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closed at its lower end by a cap 37. A spring (not shown) is provided in the flint tube 36. Lighter cap 14 has a snuffer 38 to extinguish the flame when the lighter cap returns to its closed position.

In Fig. 2 the fuel burner is an absorbent-tube member 39 disposed on top of chamber 2 and in connection therewith, said absorbent-tube member receiving sparks from the striker wheel 13 when it is rotated against the flint.

In Fig. 3 the absorbent-tube member 39 is replaced by a lighter wick 40 in a wick holder 41, the lighter wick depending into chamber 2.

I claim:

1. Pyrophoric lighter comprising a large capacity fuel tank, pyrophoric lighter mechanism arranged at the upper part of said large capacity tank, actuating means for said mechanism arranged beneath and passing through said large capacity tank, another smaller tank for the pyrophoric lighter mechanism arranged at the upper part of said large capacity tank, a tube within the large capacity tank and a wick arranged therein to feed fuel from the large capacity tank to the smaller tank, an outlet aperture on said large capacity tank, a delivery tube connected to said outlet for delivery of fuel to independent articles, and a fuel filler aperture for the large capacity tank.

2. Pyrophoric lighter comprising a large capacity fuel tank, pyrophoric lighter mechanism arranged at the upper part of said large capacity tank, actuating means for said mechanism arranged beneath and passing through said large capacity tank, another smaller tank for the pyrophoric lighter mechanism arranged at the upper part of said large capacity tank, a tube within the large capacity tank and a wick arranged therein to feed fuel from the large capacity tank to the smaller tank, an outlet aperture on said large capacity tank, a delivery tube connected to said outlet for delivery of fuel to independent articles, a pipe lighter spill, and a fuel filler aperture for the large capacity tank to receive said pipe lighter spill.

3. Pyrophoric lighter comprising a large capacity fuel tank, a filling aperture for said large capacity tank, pyrophoric lighter mechanism arranged at the upper part of said large capacity tank, mechanical linkage in the lighter mechanism, plunger means arranged at the base of the large capacity tank for actuating said mechanical linkage, a flint tube for said lighter mechanism passing completely through the said large capacity tank, another smaller tank for the pyrophoric lighter mechanism arranged at the upper part of the large capacity tank, a tube within the large capacity tank and a wick arranged therein to feed fuel from the large capacity tank to the smaller tank, and means for the delivery of fuel from said large capacity tank to independent articles.

4. Pyrophoric lighter as claimed in claim 3 wherein the means for delivery of fuel from the large capacity tank to independent articles comprises an outlet on the large capacity tank, a flexible delivery tube attached to said outlet, a fuel control valve comprising a spring pressed plunger disposed at the end of said flexible delivery tube, an air valve at the upper part of the large capacity tank adapted to form a rest for and to be operated by the flexible delivery tube, and a pipe lighter spill on the large capacity tank.

5. Pyrophoric lighter as claimed in claim 3 wherein the means for delivery of fuel from the large capacity tank comprises a discharge outlet

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on said tank, a rigid delivery tube secured to said outlet, a bearing at the base of the tank about which the delivery tube can pivot, and a fuel control valve formed by the said bearing and actuated by the pivotal action, and having a pipe-lighter spill, an outlet aperture in the large capacity tank therefor, a stem for said spill, a handle portion attached to the stem, a chamber in said spill filled with cotton wool and adapted to be recharged with fuel each time that it is replaced in the said outlet aperture, a fuel filler aperture for the large capacity tank, and a screw-threaded cap for said fuel filler aperture adapted to be pulled out therefrom an appropriate distance for filling purposes and to be replaced substantially flush with the tank.

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8

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,775,423	Donovan et al. -----	Sept. 9, 1930
1,875,902	Wickwire -----	Sept. 6, 1932
1,900,684	Aronson -----	Mar. 7, 1933
2,035,886	Holtzman -----	Mar. 31, 1936
2,045,457	Gabritsch -----	June 23, 1936

FOREIGN PATENTS

Number	Country	Date
285,282	Great Britain -----	Feb. 16, 1928
307,535	Germany -----	Sept. 5, 1918
484,786	France -----	Aug. 14, 1917