Jan. 31, 1956 L. T. WARD 2,732,699

CIGARETTE LIGHTER AND VALVE

Filed Aug. 16, 1954

Fig. 1.

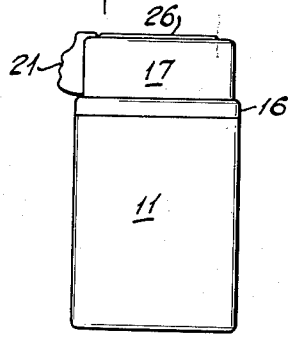


Fig. 2.

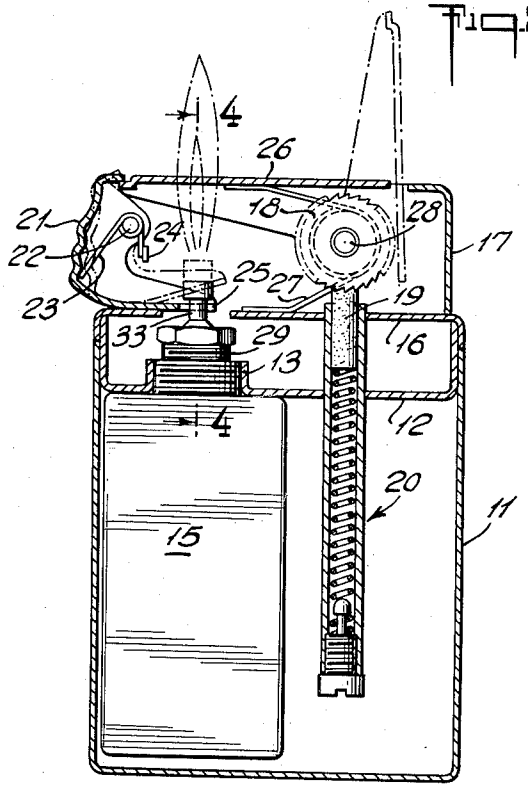


Fig. 3.

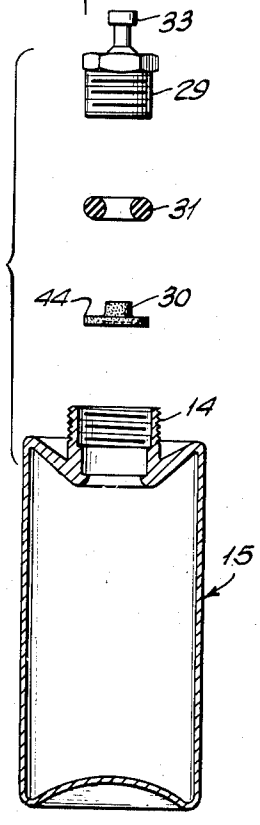
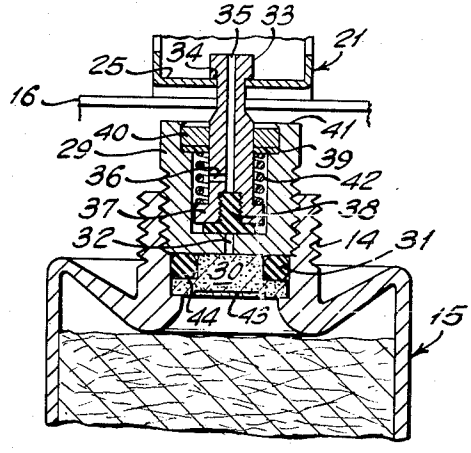


Fig. 4.



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CIGARETTE LIGHTER AND VALVE

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2 Claims. (Cl. 67—7.1)

This invention relates to a butane-type cigarette lighter and more particularly to a valve for butane-type cigarette lighters.

It is an object of this invention to provide a valve adapted for cigarette lighters which will release butane fuel prior to emission of sparks from an activated flint.

It is a further object of this invention to provide a valve adapted to give a flame of uniform height.

It is another object of this invention to provide a throw-away type of butane container having a valve of simple and inexpensive construction.

It is another object of this invention to provide a cigarette lighter having a thumb operated lever element adapted to release butane lighter fuel prior to exposing said released fuel to a plurality of sparks.

It is yet another object of this invention to provide a cigarette lighter having thumb operated element adapted to release both a latched cover along with the release of butane fuel.

These and other objects of this invention will become apparent upon reading the following disclosure taken in conjunction with a drawing in which:

Fig. 1 is an exterior side view of a cigarette lighter,

Fig. 2 is a longitudinal vertical section through the lighter showing the manner of releasing a latched cover along with opening of the butane fuel valve and further showing in dotted outline the cover parts and flame when in open position,

Fig. 3 is an exploded view showing the manner of assembling the valve parts to a butane fuel container, and

Fig. 4 is a detailed section view taken on line 4—4 of Fig. 2 of the valve and showing in part, the cover lever, butane fuel container, and lighter case.

One of the disadvantages of commonly used cigarette lighters is the lack of uniform flame height due to the varying pressure of the butane fuel in its container. Another disadvantage is the lack of co-operation between the mechanism releasing the butane fuel and the mechanism igniting the fuel. This invention overcomes both of these disadvantages.

The lighter comprises a lower removable container 11 adapted to frictionally fit a base plate 12. The base plate 12 has an internally screw threaded tubular stud 13 adapted to receive the screw threaded nose 14 of butane fuel container 15.

The lighter (Fig. 2) is provided with a top plate 16 secured by spot welding or other conventional means to base plate 12. A vertical walled U-shaped enclosure plate 17 is secured to the top plate 16 by conventional means. A ratchet toothed spark making wheel 18 is journaled to the two opposed legs of the U-shaped enclosure plate 17.

A flint 19 is disposed against the bottom of wheel 18 and a spring loaded conventional means 20 is provided for maintaining constant pressure contact between said flint and said wheel.

A thumb operated rocker plate 21 is journaled to a pivot rod 22 disposed between the two legs of enclosure 17, said rocker plate being in effect a lever disposed in

the opening of the enclosure 17. A spring 23 is disposed about said pivot rod 22, having one end pressing constantly against an abutment 24 secured to the interior of a leg of enclosure 17, and having the other end disposed in constant pressure exerting relationship against the rocker plate 21. The rocker plate 21 is provided with a forked or bifurcated base consisting of a pair of upwardly curvatured tines 25 (Fig. 4).

A latch cover 26 adapted for latching to rocker plate 21 is secured to a coil spring 27 by spot welding or other means, the spring 27 being journaled about the axle 28 forming the axle of ratchet wheel 18.

The valve of this invention is shown in Figs. 3 and 4 and comprises a screw threaded valve housing 29, a coined fuel flow regulating disc 30, and a gasket ring 31 of rubber or plastic.

The housing 29 provided with a well cavity and a conduit 32 (Fig. 4) is provided to communicate between the base of the well and the bottom surface of housing 29.

A rod-like moveable plunger 33 having an undercut circular ledge 34 and an axially disposed tubular channel 35 is provided with a transverse conduit 36 near its bottom. The plunger 33 is provided with a circular base plate 37 having a diameter slightly less than that of the diameter of the well of housing 29 to permit passage of butane gas therebetween.

A rubber or plastic plug 38 is press fitted or otherwise secured into a suitable cavity provided therefor in the base of said plunger. The plunger 33 with its plug 38 is placed in the well of housing 29 with the plug 38 forming a seal over the well opening of conduit 32. A coil spring 42 is disposed about the plunger and seated upon the rim 37 thereof.

A circular gasket ring 39 of rubber or plastic is then disposed about plunger 33 and a metal retaining ring 40 is placed upon the gasket ring 39. The metal of the lip of the housing 29 is peened over at a plurality of points 41 thereby locking the ring 40 against dislodgement by spring pressure exerted by coil spring 42 disposed in the well of housing 29 about the plunger 33 and between sealing gasket ring 39 and plunger rim 37.

The spring 42 is thus under compression and constantly urges the plunger rim 37 and hence plunger 33 downwardly to effect a gas tight seal between rubber or plastic plug 38 and conduit 32.

The tines 25 of rocker plate 21 engage the undercut ledge 34 of plunger 33 so that inward movement of the rocker tines 25 lifts the plunger 33, thereby causing the gas-tight seal between plug 38 and conduit 32 to be broken. The breaking of this seal permits the butane gas under pressure to pass through conduit 32 and between rim 37 and the well surface of housing 29, and hence through conduit 36 into conduit 35 and thus out of the valve in close proximity to the sparks emitted by rotation of wheel 18 against flint 19.

The gas in the well of housing 29 can not leak out between plunger 33 and its locking ring 40 because of the gas-tight seal formed between the plunger and gasket 39.

In the preparation of a flame of constant uniform height, the disc 30 made of powdered metal to permit passage of butane gas is coined, i. e. burnished or compressed by striking it so as to increase its density thereby producing a disc 30 having the correct qualities to permit the passage of a flame of desired height. Each disc may be coined or burnished under butane pressure so that the flame height can be adjusted by the pressure of the coining tool against disc 30. The coined disc is thus provided with a recess 43 produced during the coining procedure and also is provided with a rim 44 adapted to engage sealing ring 31.

The coined disc is seated into a well provided for it, disposed in the nose 14 of the butane container 15 and

the gasket 31 is seated upon rim 44. The engagement of the base of screw threaded housing 29 with rubber or plastic ring 31 effects a gas tight seal therebetween.

In the operation of this lighter the pressure of the thumb on rocker plate 21 causes the upwardly curvation of the tines to move inwardly thereby lifting plunger 33, immediately thereafter cover plate 26 is unlatched from its locked position with rocker plate 21 and flys open due to action of spring 27. The rotation of cover plate 26 causes the wheel 18 secured thereto by conventional means to rotate against flint 19, causing a shower of igniting sparks to be directed toward the already emitted butane gas whereupon the ignition of the butane becomes instantaneous.

The flame continues as long as the rocker plate is pressed inwardly. Release of thumb pressure on the rocker plate 21 permits the spring 23 to push the rocker plate back to its normal outwardly disposed position, thereby pulling the curvatured tines downwardly and permitting the spring 42 to pull plunger 33 downwardly to effect a gas tight seal between plug 38 and conduit 32, thus cutting off the butane fuel supply and extinquishing the flame.

Modifications of a non-inventive nature such as disposing corrugations on the rocker plate for better engagement of the thumb therewith are all within the skill of the art and embraced within the definition of the claims herein.

I claim:

1. A cigarette lighter comprising in combination a support framework having a horizontal top plate having screw threaded aperture, a butane fuel container having a nozzle in the top thereof secured in said aperture, a coined disc having a coined recess therein and adapted to regulate flame height disposed in said nozzle of said secured container, a threaded cylindrical housing having a well with a conduit in the well bottom wall disposed in said nozzle with the conduit engaging the coined disc, a spring loaded plunger disposed in said well and having a top section protruding exteriorly of said housing, said plunger having a conduit in said top section communicating with the well of said housing, a resilient valve seat disposed in the bottom of said plunger and normally closing said conduit in said housing, a spring-loaded swingable rocker plate secured to the top of said framework and having a pair of curvatured tines adapted to engage said plunger to lift it with its resilient seat, and means for directing a shower of sparks toward the plunger top simultaneously with the operation manually of said rocker plate.

2. A disposable cigarette lighter combination consisting of a valve combination having a cavitated housing, having exteriorly disposed screw-threads adapted to engage co-acting screw-threads of a fuel gas container, said housing having a conduit disposed in the cavitated bottom thereof, a tubular plunger having a bottom cut-off plug and a shoulder portion loosely disposed in the cavitated housing for reciprocal vertical movement therein, securing means for securing said plunger in said housing, spring coil means disposed about said plunger between and upon said plunger shoulder and securing means for continuously urging said plunger plug against said conduit to form a gas tight seal, and a flanged powdered porous metal disc adapted to engage said conduit of said housing in opposed relationship to the engagement of said plug of said plunger with said conduit, said disc having a pre-selected bottom recess adapted to permit a predetermined uniform passage of fuel gas therethrough and a high pressure resistant container having an integral nozzle, said nozzle having internally disposed screw-threads for engaging the exteriorly disposed screw-threads of said cavitated housing and further said nozzle having exteriorly disposed screw threads adapted to engage a corresponding interiorly disposed screw-threaded tubular element of a cigarette casing, said nozzle being further provided with an interiorly disposed annular rim adapted to engage said porous metal disc, said valve combination being threadingly disposed in said nozzle, said disc being disposed on said annular rim of said nozzle and beneath said housing, and a resilient gasket sealer ring disposed on the flange of said disc and the bottom of said housing to effect a gas tight seal therebetween.

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