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PYROPHORIC LIGHTER

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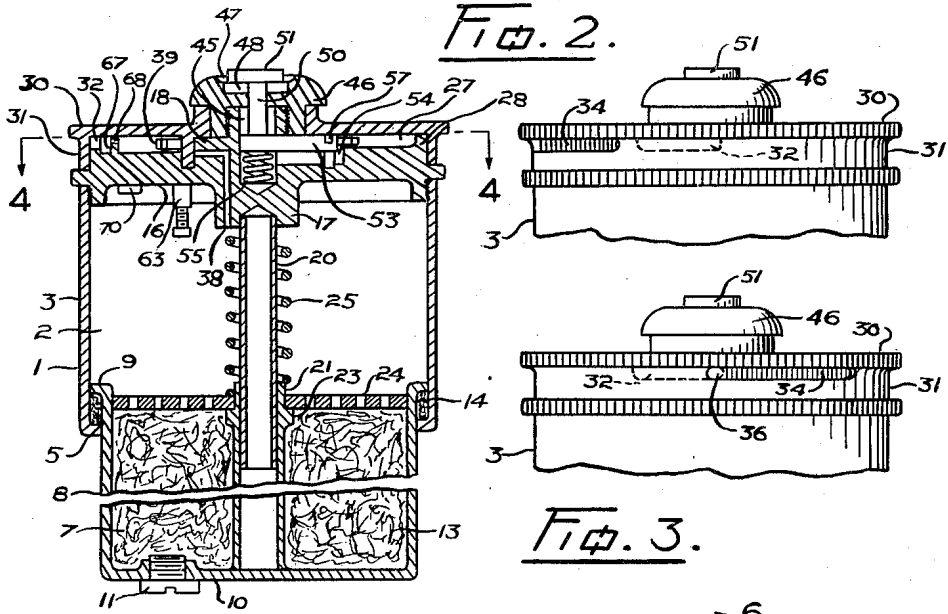


Fig. 1.

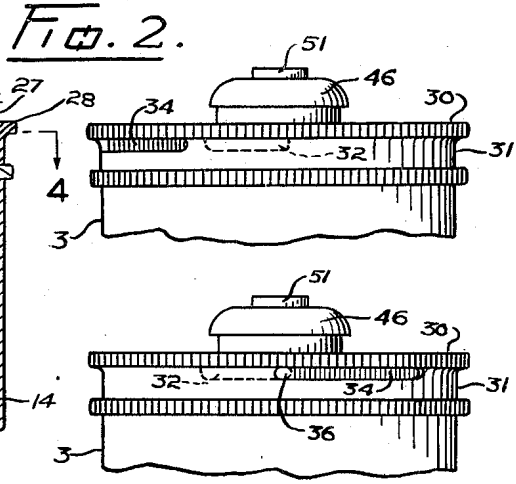


Fig. 3.

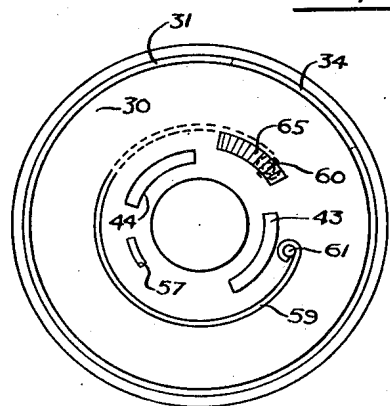


Fig. 5.

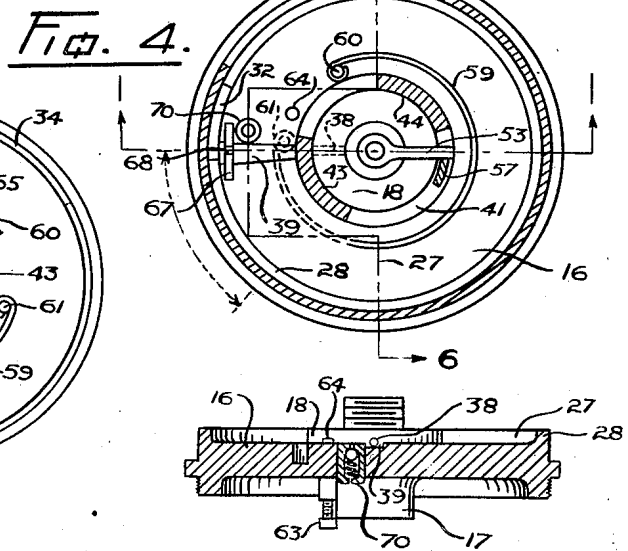


Fig. 6.

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PYROPHORIC LIGHTER

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6 Claims. (Cl. 67-4.1)

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My invention relates to improvements in pyrophoric lighters which are particularly adapted for pipe smokers.

While lighters of many kinds have become popular for the purpose of lighting cigarettes, they have not been accepted generally by pipe smokers for two special reasons. One of these reasons is that in general the flame produced by the lighter normally contains a heavy carbon content which spoils the flavour of the tobacco and the second is that it is difficult to relight a pipe in which the bowl is but partially filled.

The present invention contemplates a lighter in which no wick is used and in which the flame is produced by vapour under pressure and inspired air to promote proper combustion; one in which the flame issues in elongated form, so that it will reach down to the base of the pipe bowl, and one in which the flame is substantially carbon free, so that no taste is imparted to the tobacco to impair its flavour.

Referring to the drawings:

Fig. 1 is a transverse sectional view of the invention taken on the line 1-1 of Figure 4.

Fig. 2 is an elevational view of the upper part of the lighter shown set for use.

Fig. 3 is an elevational view of said upper part of the lighter showing the flame opening fully contracted.

Fig. 4 is a plan view taken on the line 4-4 of Figure 1, showing the parts set for igniting.

Fig. 5 is a plan view looking up into the rotating cover.

Fig. 6 is a sectional view of the container top plate taken on the line 6-6 of Figure 4.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates generally a container consisting of an upper cylinder 2 having a peripheral wall 3, the lower end of which is inturned to form a flange 5 and a lower cylinder 7 which acts as a plunger and is formed with a peripheral wall 8 which is outwardly flanged as at 9 to fit the cylinder 2 and a bottom wall 10 fitted with a filling plug 11. The bottom cylinder 7 is filled with flocculent material 13 to absorb lighter fluid. A suitable packing 14 is interposed between the flanges 5 and 9 to retain the lighter fluid against undue evaporation.

Threadedly secured to the upper end of the cylinder 2 is a top plate 16 having a central boss 17 on its underside and a boss 18 on its upper side. Secured in the boss 17 is a central tube 20 which has telescopic engagement with a base tube 21 fitted on the bottom wall 10 of the cylinder 7.

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The base tube is provided with a flange 23 which supports a perforated plate 24 overlying the flocculent material 13 and forms an abutment for a compression spring 25 surrounding the tube 20 and bearing upwardly onto the boss 17 to extend the container 1 to the position shown in Figure 1 and to keep the packing 14 in normal compression.

The upper side of the top plate 16 is recessed as at 27 to define a peripheral wall 28 upon which a cover 30 having a depending rim 31 is rotatably mounted. The wall 28 is slotted as at 32 and the rim 31 is slotted as at 34, the latter slot 34 being adapted to traverse the slot 32 to form a gas opening 36, which first extends in igniting to the full width of the slot 32 and contracts to a small orifice as shown in Figure 3 when the flame is properly burning. A gas passage 38 extends upwardly and radially through the boss 17 from the upper cylinder 2 and discharges into an open radial channel 39 in the base of the recess 27, the outer end of said channel terminating adjacent one end of the slot 32, see Figure 4.

An annular groove 41 surrounds the upper boss 18 which intersects the gas passage 38 and the channel 39 and the cover is provided with two concentric skirt segments 43 and 44 which both ride in the groove 41 to serve as end bearings for the cover, with the skirt segment 43 serving when the device is set or cocked ready for operation as a valve to close off the radial portion of the gas passage 38. The upper boss 18 is provided with a central bore 45 and is externally threaded at its upper end to receive a cap 46 which is adapted to hold the cover in position upon the top plate 16. The cap 46 is provided with a dished depression 47 with a recess 48 at its base and a central base opening in which the stem 50 of a press button 51 passes. The stem 50 is fitted with a radial arm 53 which is vertically movable in a radial groove 54 formed in the top plate 16. The arm 53 is normally supported in raised position by a coil spring 55. The cover 30 is provided with a saw tooth stop 57 which is adapted to be engaged by the radial arm 53 to hold the cover in set position as shown in Figures 1 and 4.

A C-shaped spring 59, having one end attached to a pin 60 upstanding from the top plate 16 and its opposite end secured to a pin 61, is shown in dotted line in Figure 4, which pin extends downwardly from the cover 30. A flint holder 63 of any suitable type is provided to project its flint 64 above the top plate 16 and a file 65 is mounted flush with the lower face of the cover 30 which

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serves to abrade the flint and produce igniting sparks.

If it is desired to render the lighter storm proof, a partition 67 is disposed across the channel 39 adjacent the slot 32 in the wall 28, the partition being provided with a slot 68 through which the gas will flow to support the flame between said partition and the opening 36.

In order that the casing 1 be supplied with air to aid in forming a combustible vapour therein, an automatic air inlet valve 70 is provided in the top plate 30, so that when the casing distends under the thrust of the compression spring 25, air enters through said valve to mix with the lighter fluid vapour.

In using the device, the casing 1 is charged with lighting fluid and a flint is provided, the cover 30 is turned in a clockwise direction until the saw tooth stop 57 has ridden over the radial arm 53, depressing it in so doing, and has become latched thereupon, as shown in Figure 1.

The above described movement disposes the slot 34 of the cover in the position shown in Figure 2, at this time the valve closure or segments 43 and 44 will be disposed to cover the gas passage 38, thus preventing gas leakage from the container. When a flame is required, the thumb is placed under the lower cylinder 7 and a finger placed upon the button 51 and the device is squeezed between them. The pressure exerted contracts the casing to build up a slight pressure therein and the button will be depressed into the recess 48 and below the upper surface of the cap 46, thus depressing the radial arm 53 into the slot 54 and releasing the saw tooth dog 57, thus allowing the C-spring 59 to expand and swing the cover in a counter-clockwise direction to the position shown in Figure 3. The swing of the cover in this direction first uncovers the gas passage 38 to allow gas to flow along the radial channel towards the stationary slot 32, which is being uncovered by the movement of the cover wall slot 34, simultaneously the file 65 engages the flint 64 and throws a succession of sparks across the path of the gas in the channel 39 to ignite it. The space surrounding the flow of gas between the top plate 16 and the cover 30 is ample to ensure proper ignition and as the opening 36 narrows down due to the relative passing of the slot 34 along the slot 32, the flame is narrowed down and the pressure behind it is increased, so that a narrow tongue of flame is projected from said opening, which will continue through the casing compressing period, but the flame between the top plate and the cover will obviously discontinue. If the lighter is provided with the transverse partition 67, the gas will flow through its slot 68 and the flame will be sustained beyond said slot and inside of the gas opening 36, thus shrouding the base of the flame and preventing it from being blown out when the lighter is being used in strong wind. As soon as the pressure is discontinued on the underside of the casing or the lower cylinder 7, the flame will die out due to the cessation of flow through the gas passage 38. The expansion as between the upper and lower cylinders 2 and 9 will again cause air to be drawn into said casing to make the gas vapour combustible.

What I claim as my invention is:

1. A pyrophoric lighter comprising a casing adapted to hold liquid fuel, a spring tensioned rotatable cover for said casing, said cover and casing having an interspace therebetween, a vapour passage communicating between the cas-

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ing and the interspace, a segmental valve carried by the cover normally closing the vapour passage, an opening in an outer wall of the lighter substantially aligned with the interspace terminal of the vapour passage, a radial channel connecting the vapour passage with the opening an igniter adjacent said channel, means for forcing fuel vapour from the casing through said interspace, means for releasing the cover to open said valve and operate the igniter to ignite the vapour in the channel.

2. A pyrophoric lighter comprising a casing adapted to hold liquid fuel, a cover for said casing, said cover and casing having a radial channel therebetween, a vapour passage communicating with the channel, an opening in an outer wall of the lighter substantially aligned with the outer end of the passage, an igniter in the interspace, means for forcing fuel vapour from the casing through said channel, means for operating the igniter to ignite the vapour in the interspace, and means for decreasing the area of the opening to support the flame exteriorly of the lighter.

3. A pyrophoric lighter comprising a fuel casing having a vapour outlet passage, a rockingly mounted spring tensioned cover for the casing, said cover defining an interspace with the casing and having a normally covered peripheral opening, an igniter within the interspace to ignite vapour emerging from the vapour passage, a radial channel extending from the vapour passage towards the opening a segmental valve closure integral with the cover adapted to close off the vapour passage, said cover being adapted to be set manually, means for releasing the set cover to operate the igniter and remove the valve closure from the vapour passage, and means for forcing vapour from the casing through the vapour passage, the channel and the cover opening.

4. A pyrophoric lighter comprising a fuel casing having a vapour outlet passage, a rockingly mounted spring tensioned cover for the casing, said cover defining an interspace with the casing, said cover having a peripheral wall and a normally closed opening therein, an igniter within the interspace to ignite vapour emerging from the vapour passage, a segmental member carried by the cover forming a valve closure adapted to close off the vapour passage, said cover being adapted to be set manually, means for releasing the set cover to operate the igniter and remove the valve closure from the vapour passage and open the opening, and means for forcing vapour from the casing through the vapour passage, towards said opening and a slotted partition interposed between the peripheral wall of the cover and the adjacent end of the vapour passage.

5. In a lighter having means for delivering a flow of combustible vapour from a fuel chamber and an igniter for igniting the vapour so delivered, a spring tensioned cover rotatable upon the vertical axis of the fuel chamber for the igniter, said igniter being operatively connected with the cover, said cover being adapted to be manually set to operate the igniter, means for releasing the cover from set position, said means including a cap having a recess in the center of said cover, and a spring mounted press button movable axially into said recess, said button being adapted to move substantially into the recess before effecting the release of said cover, said means for delivering combustible vapour being manually operable in a direction opposed to force applied to the press button to release the cover.

6. A pyrophoric lighter comprising a cylin-

drical fuel casing formed of two telescoping members, a rotatable cover mounted upon the casing to define an interspace between said cover and the casing, said cover having a peripheral rim and a slot therein, and said casing having a wall surrounding the interspace and having a slot therein, spring means anchored to the casing and the cover to cause the rim slot to sweep across the wall slot and finally define a restricted opening from the interspace for vapour flow, said casing having a vapour passage communicating with the interspace, igniter means within the interspace adapted to operate as the cover moves towards the restricted opening position, latching means for holding the spring means tensioned and a button concentric with the cover for releasing the tension of the spring to rotate the cover and operate the igniter, said telescopic members being adapted to force vapour through the vapour

passage on being contracted telescopically and said opening when restricted serving to prolong the outflow of vapour from the interspace after ignition.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
904,886	Muller -----	Nov. 24, 1908
908,728	Batley -----	Jan. 5, 1909
1,718,038	Douglas -----	June 18, 1929
1,757,231	Batley -----	May 6, 1930
1,757,641	Lilly -----	May 6, 1930
1,817,335	Aronson -----	Aug. 4, 1931
2,318,327	Phillips -----	May 4, 1943