Dec. 6, 1949 H. R. MONTAGUE 2,490,083

JET LIGHTER

Filed Jan. 10, 1947 2 Sheets-Sheet 1

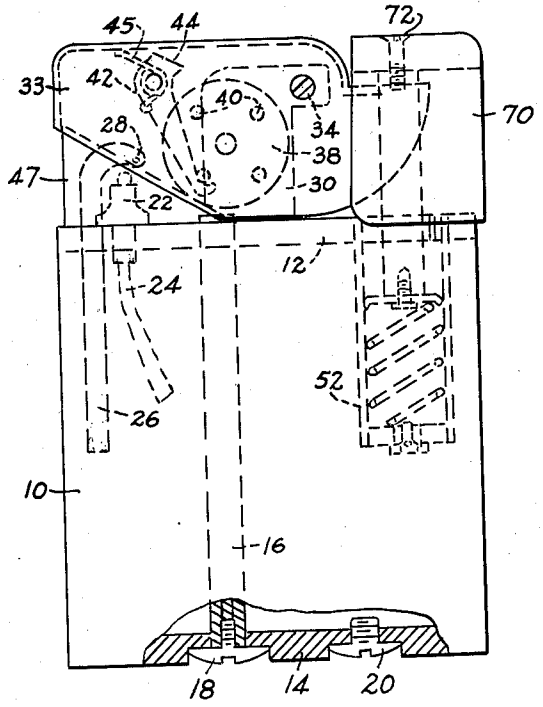


FIG. 1

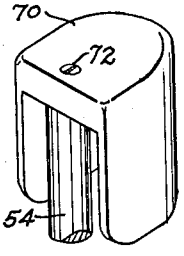
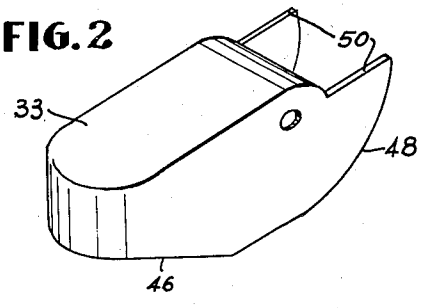


FIG. 3

FIG. 2



INVENTOR.

Homer R. Montague

Dec. 6, 1949 H. R. MONTAGUE 2,490,083

JET LIGHTER

Filed Jan. 10, 1947 2 Sheets-Sheet 2

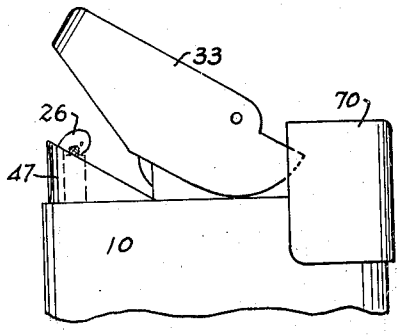


FIG.4

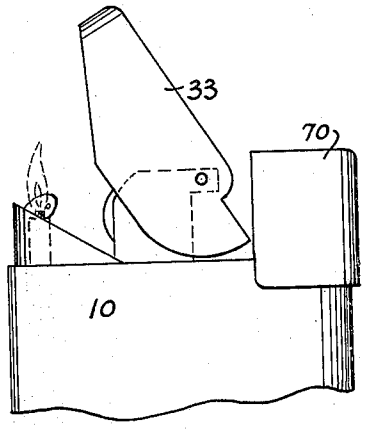
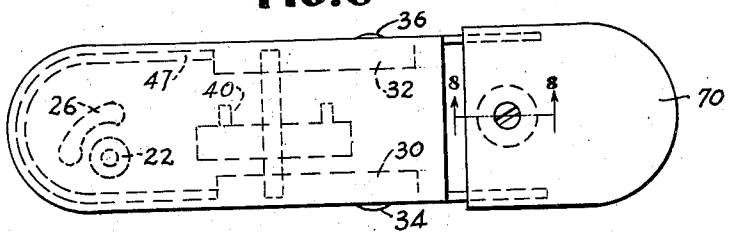


FIG.5

FIG.6



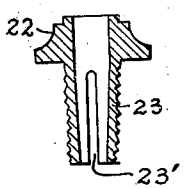


FIG.7

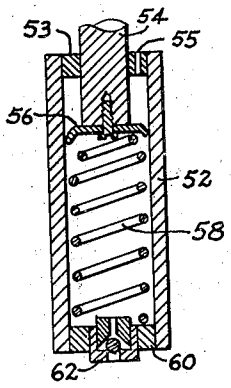


FIG.8

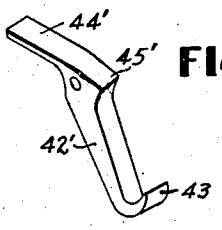


FIG.9

INVENTOR.

Homer R. Montague

Patented Dec. 6, 1949

2,490,083

UNITED STATES PATENT OFFICE

2,490,083

JET LIGHTER

Homer R. Montague, Washington, D. C.

Application January 10, 1947, Serial No. 721,232

4 Claims. (Cl. 67—7.1)

1

This application relates to improvements in the invention of my copending application Serial No. 599,793, filed June 16, 1945.

My present invention, like that disclosed in the above-mentioned application, relates to automatic jet lighters of the type in which a single conveniently located control is operable to perform both the functions of igniting the flame of the lighter and producing the desired lateral jet. In my earlier case referred to, the operation of the manual control either operates to release the stored energy of a spring in order to open the cover of the lighter and perform the igniting function, or it operates in conjunction with an over-center spring driven cover member to first partly open the cover, storing energy in the spring, which then throws the cover the rest of the way and performs the igniting function. In either form of that invention, the operation of raising the cover, through suitable linkage, spins an ordinary striking wheel against a flint to accomplish the ignition.

I have found that it is possible to dispense completely with the springs which drive the cover member, by suitably designing the manually operated member and the cover member, so that the manual member acts directly upon the cover member, to raise it completely to open position and perform the ignition. Among the advantages of this improved construction are that a much more positive igniting action is obtained, the construction is simplified and rendered more fool-proof, and inadvertent operation of the igniting device is made practically impossible. At the same time, due to the reduction in the number of parts, the cost of manufacture is greatly reduced. The last named advantage is also contributed to by the fact that the efficacy of the improved lighter is less dependent upon the accuracy with which certain of the parts are formed, whereby more liberal manufacturing tolerances are permissible.

Other objects and advantages of my invention will become apparent as the description proceeds, reference being made to the accompanying drawings which show a preferred embodiment of my improved lighter. In the drawings,

Fig. 1 is a side elevation of the complete lighter, with the cover closed,

Fig. 2 is a perspective view of the cover member alone,

Fig. 3 is a perspective view of the manually operated member and associated parts,

Fig. 4 is a partial side elevation of the upper portion only of the lighter, the cover being in an intermediate position,

Fig. 5 is a view similar to Fig. 4 but with the cover member in its completely open position,

Fig. 6 is a plan view of the lighter with the cover closed,

Fig. 7 is a sectional view of one form of wick bushing,

Fig. 8 is a sectional view of the pump mechanism, taken on the line 8—8 of Fig. 6, and

Fig. 9 is a view in perspective of a modified form of igniter pawl.

Referring now to Fig. 1 of the drawings, the lighter comprises a body portion 10 closed at its upper end by a mechanism plate 12 which may, of course, be integral with the portion 10, and closed at its lower end by a plate 14. The joints between these two plates and the body portion are made air tight. Extending through the body portion, and secured to the upper and lower plates, is the usual flint tube 16 containing a flint and its backing spring, the latter being maintained in a compressed condition by a screw 18. A filling opening in the bottom plate 14 is closed by a screw plug 20, as is common, and the usual cotton packing or the like may be used within the chamber formed by the body portion, to retain a liquid fuel therein. A wick 24 is mounted so as to pass through the mechanism plate 12 by a bushing 22, and a jet tube 26 passes through the same plate at a point adjacent the bushing 22. Jet tube 26 has a jet orifice 28 through which fuel vapor forced out of the fuel chamber passes to draw the flame of wick 24 into the desired jet, as disclosed in my previous application referred to.

Secured to mechanism plate 12, or integral therewith, are two upright supports 30 and 32, as best seen in Fig. 6. Threadedly received in the respective supports are filister-head screws 34 and 36, the heads of which act as bearings for the pivoted cover member 33, shown in perspective in Fig. 2. The usual striking wheel 38 is journalled between supports 30 and 32, and is provided with a plurality of spaced pins 40 adapted to be engaged by a pawl 42 pivotally mounted in cover member 33 (Fig. 1), and which pawl is provided with a tailpiece 44 so formed as to engage the under side of the top of the cover member 33 to limit the arc of its swing under the impulse of the spring 45.

The front edge of cover member 33 is cut away, as at 46 (Fig. 2), so that when the cover member is raised, its front edge will clear the flame from wick 24. A windshield 47 is secured to plate 12 so

as to be overlapped by edge 46 of the cover member when the latter is in its closed position.

That portion 48 of the lower edge of the cover member which extends rearwardly of the pivots 34, 36, is of an arcuate configuration centered on the axis of such pivots, so that the amount of opening movement of the cover member is not restricted. The top surface of the cover member is curved downwardly behind the pivot axis as shown in Fig. 2, stopping approximately in the horizontal plane through the pivot axis, to provide a pair of substantially horizontal wings 50 adapted to be engaged by the manually operable member as described below.

Also mounted on mechanism plate 12, but extending down into the fuel chamber, is a pump mechanism best shown in Fig. 8. The pump comprises a barrel 52 closed at its upper end by a plug 53 which is bored to support, for sliding movement, the piston 54. Secured to the lower end of the piston is a cup-like washer of thin metal or leather or the like. A spring 58 normally forces the piston upwardly, there being an orifice 55 in the plug 53 so that air behind the washer 56 may readily escape, and providing an ingress for air to be pumped into the chamber. The lower end of barrel 52 is closed by a plug 60 which carries a check valve 62 of any desired construction, and so arranged as to allow air to pass from the pump to the chamber, but not in the opposite direction.

The piston 54 of the pump extends upwardly, as shown in Fig. 1, passing between the wings 50 of cover member 33, and is secured to the top of manually operable member 70, as by a screw 72. Hence, reciprocation of the manually operable member will cause air to be drawn into the space behind the cup washer 56, while air in front of the washer will be forced into the fuel chamber and produce the desired jet from orifice 28 of tube 26. The cup washer functions as its own check-valve, so that it is unnecessary to provide a separate check therefor as in my prior application referred to above.

The operation of the device will now be clear. With the lighter in closed position, as in Fig. 1, pressure is applied downwardly upon member 70, preferably by the thumb of the same hand which holds the lighter. Engagement between the top of member 70 and the wings 50 of the cover member causes the cover member to rotate, as shown in Fig. 4, turning the flint wheel and igniting the primary flame at wick 24. Continued movement of the member 70 raises the cover all the way, to the position shown in Fig. 5, after which member 70 may be moved up and down to provide continuous pressure to the fuel chamber, and hence the jet is maintained as long as desired. To close the lighter and extinguish the flame, all that is necessary is to move the thumb from member 70 over to cover 33 and press it down to its closed position.

The usual snuffer cup for wick 24 may be secured to the inside of cover member 33, where it acts not only to snuff the wick, but to maintain a good seal against bushing 22 and hence reduce the loss of fuel through evaporation.

Pressure which is built up in the fuel pump due to action of the pump is transmitted to pressure in the chamber, from which it is released principally through the jet orifice 28. However, I have found that a certain amount of this pressure is also lost through the interstices of the wick 24, which form a leakage path parallel to that through the jet tube 26. This undesired leakage path may be rendered unobjectionable by maintaining a very tight fit between wick 24 and bushing 22. In order to accomplish this result without making it unduly difficult to thread a new wick in the bushing when required, I may use a bushing such as that shown in Fig. 7, which is provided with a taper threaded shank 23 having two or more longitudinal slots 23' therein. When a new wick is to be installed, the bushing 22 is screwed out of mechanism plate 12 and the new wick inserted in place of the old one. Bushing 22 is then returned to its threaded seat in the plate 12, the action of threading it into place causing the shank 23 to compress the material of the wick and hence providing a very high resistance leakage path for the pressure in chamber 10. The compression of the wick does not, of course, interfere with the transmission of fuel to the upper end of the wick, since such transmission is largely capillary; moreover, the rate at which fuel must pass through the bushing is very slow as compared with the rate at which gas pressure leakage would have to occur to constitute a serious drain on the pressure in the chamber. It is also possible to use a cylinder of suitable ceramic material for the wick, since certain grades of ceramic are sufficiently porous to transmit adequate liquid fuel through the mechanism plate, while maintaining a fairly effective seal against pressure leakage. Such ceramic wicks also have the advantage of very long life, since they are by nature incombustible. However, I do not wish to be restricted to any particular kind of wick, since my invention does not depend for its operation upon the use of any special kind.

Instead of using a pawl such as 42 of Fig. 1, which required a separate spring for its operation, the pawl and spring may be made in one piece. As shown in Fig. 9, such a pawl may comprise a body portion 42', a hook 43, and a springy tail-piece 44' adapted to engage the roof of the cover member 33 so as to maintain spring tension on the pawl. At the same time, abutment 45' serves to engage the roof on the other side of the pivot to prevent the pawl from swinging too far down when the cover is open.

Having described a specific embodiment of my invention, I wish it to be understood that the details of construction shown are merely exemplary, and that many modifications may be made therein without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. In a pocket lighter, a body portion adapted to contain fuel, a wick and a jet tube mounted on said body portion, a cover member mounted for rotation on said body portion, igniting means adapted to be operated by movement of said cover member from closed to open position, means for producing pressure in said jet tube, and a member adapted to be manually reciprocated to operate said pressure producing means, said reciprocable member being so located with respect to said cover member as to drive the latter from closed to open position in one full stroke of said reciprocable member.

2. In a lighter, ignition means, jet producing means, a cover connected to said ignition means to operate the same by movement from covering to uncovering position, a manually operable member adapted to rotate said cover from covering to uncovering position, said member remaining in contact with said cover substantially throughout the latter's uncovering movement, and an opera-

tive connection between said member and said jet producing means.

3. In a lighter, ignition means, jet producing means, a cover connected to said ignition means to operate the same by movement from covering to uncovering position, a manually operable member adapted to rotate said cover from covering to uncovering position, said member constituting the sole means for moving said cover to its uncovering position, and an operative connection between said member and said jet producing means.

4. In a lighter, a wick, ignition means therefor, jet producing means, a cover member for said wick pivotally mounted for movement to an uncovering position, an operative connection between said cover member and said ignition means,

a manually operable member adapted to drive said cover member by contact therewith throughout its movement to uncovering position, and an operative connection between said manually operable member and said jet producing means.

HOMER R. MONTAGUE.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,700,021	Bruckmann	Jan. 22, 1929
2,005,557	Penney	June 18, 1935
2,318,327	Phillips	May 4, 1943